IT-Based Solutions to the Electoral System in Nigeria

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Abstract
The purpose of this paper is to discuss the challenges as limitations to the current electoral system in Nigeria’s democracy, proffering possible way forward. The flawed electoral process of the last two Presidential elections equally calls for technology-enabled solutions to this social malaise which could lead to chaos and anarchy if nothing is done to forestall these electoral menace in future elections.. Electoral fraud perpetrated in the cause of political activities including pre-election and post-elections periods such as multiple registration, invalid voter’s register, multiple voting, poor organization of electoral process, violence, ballot stuffing and snatching, logistic and administrative constraints. This paper takes critical steps to addressing these numerous elections vices in Nigeria’s electoral system, with the aim to provide a viable option that would ensure credible, fair and genuinely acceptable elections in the country, in the foreseeable future. An IT-driven voting, otherwise known as e-voting has been developed for implementation in this paper.

Keywords: Elections, Electoral Process, Commission, Database, Election Violence and Voters

Introduction
According to Igbuzor, [8] there is consensus among theorists and development practitioners that one of the greatest challenges to the development of nations is political leadership. The progress, development and fortunes of many nations are tied to the type and quality of political leadership that they have had and continue to have. Several scholars have argued that the greatest problem confronting Africa is the political condition underscoring the importance of political leadership. Otive Igbuzor quoted Claude Ake thus: Many factors have been offered to explain the apparent failure of the development enterprise in Africa: the colonial legacy, social pluralism and centrifugal tendencies, the corruption of leaders, poor labour discipline, the lack of entrepreneurial skills, poor planning and incompetent management, inappropriate policies, the stifling of market mechanisms, low levels of technical assistance, the limited inflow of foreign capital, rising commodity prices at home and falling commodity prices of export products and unfavorable terms of trade, and low levels of saving and investment. These factors are not irrelevant to the problem, alone or in combination they could be serious impediments to development. However, the assumption so readily made that there has been failure of development is misleading. The problem is not so much that development has failed as that it was never really on the agenda in the first place. By all indications, political conditions in Africa are the greatest impediment to development.

It has been established that the best approach for the emergence of political leadership in modern world is through the electoral process. Many countries all over the world are therefore constantly refining
their electoral processes to ensure the emergence of the right kind of political leadership. In Nigeria, the process of refining the electoral process has been a recurrent one. Since the return to civil rule in 1999 after many years of military rule, the electoral law guiding the conduct of elections has been amended after every election leading to the enactment of the 2001, 2006 and 2010 electoral acts. The bigger problem with our electoral system however, and what constitutes the Nigerian tragedy, and the *raison d’être* for this paper is that even if we do get free, fair and credible elections, we will still end up with predominantly bad leaders. This is because most of the candidates presenting themselves for elective offices are corrupt or corruptible, lack a track record of excellence or achievements, are unpatriotic and are only seeking office for selfish reasons.

Ugiagbe [12], analysis of Electoral Violence in Nigeria: Implications for Security, Peace and Development. Election violence has remained a feature on Nigeria’s political landscape, and a review of the problem suggests a number of reasons such as poverty, a culture of impunity, weak penalties, a lack of effective governance, and small arms proliferation, amongst others. It also looks at the effects of instability and violence in Nigerian society and proffers a number of solutions ranging from sustainable development, security sector and electoral reforms, and anti-corruption measures.

Elections are the acceptable means of effecting changes in government in contemporary democracies. An election is “an organized event at which somebody is chosen by vote for something, especially a public office. Electoral is defined as “relating to or involving elections, electors or voters” while violence is “the use of physical force to injure somebody or damage something.” According to Tafa Balogun in Ugiagbe [12], “all forms of violence that emanate, at any stage, from differences in views, opinions and practices during the process of elections, could be regarded as electoral violence.” Electoral violence has regularly been reported in Nigeria and manifests in the three (3) electoral stages, namely pre-election, during election and post-election, in various forms. Electoral violence in Nigeria has two broad dimensions, physical and psychological. Electoral violence ranges from acts of assault, arson, ballot box snatching and stuffing to murder/assassination. Electoral violence amongst other forms has reportedly claimed thousands of lives in Nigeria between 1999 and 2006.

**Over View of Elections In Nigeria**

There are a lot of challenges with the conduct of elections in Nigeria from the 1966 election to the 2011 election. It has been documented that elections in Nigeria are constant tales of violence, fraud and bad blood. The challenges include among other things irregularities which put the credibility of the entire electoral process in doubt; problems with the legislative framework which puts constraints on the electoral process; several organizations are not playing their roles to ensure credible, free and fair election; the electoral system does not give room for inclusiveness; lack of independence of electoral commissions; long process of election dispute resolution; irresponsible behavior by politicians and followers manifesting in thuggery and violence; lack of effective democratic institutions and monetization of politics. It has been documented that money not only determines who participates in electoral politics but that money drowns votes and voices in Nigeria as ‘godfathers’ openly confess about shady deals, funding or sponsoring elections for ‘godsons’ and purchasing electoral victory. The end result of the challenges is that the votes of the citizens do not count.

Nigerians seems to have acquired a culture of political/electoral violence.
Violence has become part of the political culture in Nigeria such that all elections since independence are virtually violence ridden. Nigeria has conducted eight general elections since independence in 1960. The elections were held in 1964, 1979, 1983, 1993, 1999 and 2003, 2007, 2011. All of these elections were substantially marred by various types of electoral violence or violence associated with party politics and conduct of elections. Thus, one of the major challenges of managing the electoral systems in Nigeria is how to prevent pre, during and post election violence.

Electoral violence in Nigeria is characterized by a number of factors. These include poverty and unemployment, ineffectiveness of security forces/culture of Impunity, weak penalties, bad governance and corruption, lack of database systems as well as small arms proliferation. The army of unemployed youth being used as tool for electoral violence underscores the need for a vibrant national economy. The culture of impunity occasioned by the ineffectiveness of security agencies justifies the need for security sector reforms.

The problem of electoral violence is compounded by the weak provisions of the penal code on electoral offences which demand a review of extant laws. Electoral violence is further fuelled by the issues of bad governance and corruption as well as small arms proliferation. Amongst other effects, political instability, insecurity, underdevelopment and cycle of violence were identified and their impacts on human security, social and economic development highlighted.

The problem of political instability demands that accountability, social justice, transparency, rule of law, gender equality and due process must guide governance and leadership; and underpins the role of the media and civil society groups in ensuring that a desirable state is achieved.

Electoral violence and rigging during elections affect the credibility of the electoral system, the democratic system and the rule of law. The nature, extent and magnitude of violence associated with elections and rigging in this country are posing serious threats to the national quest for stable democratic transition, as well as to the attainment of the long term goal of consolidated democracy. Unless serious work is done to deal with these problems, at this early stage, they could grow and assume monstrous proportions, such as could derail not just the Nigerian democratic process but also the Nigerian national project. Apart from the general negative impact on the democratic process, electoral violence also has direct negative physical and emotional/psychological impact on Nigerians. The physical impacts are the ones well known which consists of attacks and assaults by one group of partisans on another resulting in injuries and at times in death. Candidates often recruit and arm gangs of youths, ostensibly for protection against the scheming of the opponents, but in reality often used for premeditated attacks on opponents. The psychological dimension of election violence is inflicted on people by the aggressive, abrasive and anarchic conduct of candidates and their thugs and supporters during campaigns and during and after elections.

At the centre of electoral violence and rigging in Nigeria are youths who are used as party thugs, party workers(drivers etc) and who are made to form youth wings used by party henchmen for political violence and criminal activities for token sums . Youths’ involvement in electoral violence contributes to a substantial level to the existing culture of political violence in the country which is currently eroding people’s confidence in the electoral system, our nascent democracy and the rule of law. Apart from these, the youths themselves are being destroyed in two main ways. One, many are wounded and
even killed in some of these violent acts. Two, the future of our youths are negatively affected. Instead of being engaged in productive ventures that would prepare them for future leadership and productive adult lives they engage in destructive violent activities that could destroy them. Third, electoral violence and rigging erode credibly in the rule of law and impact negatively on the democratic activities. By engaging in electoral violence and rigging, the youths are helping to erode confidence in the system and thus working against the current campaign to make Nigeria a truly democratic country for the benefit of all.[10]

This violence negates peaceful coexistence, law and order. In addition to security concerns, it militates against the consolidation of democracy. This in turn impact on the social and economic well being of the nation and creates imbalances or instances of structural violence.

Root Causes of Electoral Violence

Election Material Supply Problems: Nigerian elections materials meant for elections are not always made available as when due for elections.

Poverty and unemployment: Poverty is the state of being extremely poor. It is a situation whereby an individual cannot meet the basic needs of life Maslow [7]. Such a person is more likely to participate in violence than a rich person in line with the relative deprivation theory Gurr [3]. When the situation is compounded by a “youth bulge,” the propensity for violence increases. The crumbling of nation-states in future has been attributed to demography and environmental factors Kaplan [5], This assertion aptly captures the situation in Nigeria, where an ‘army of unemployed youth’ has become a tool for electoral violence. The 2002 killing and bombing in Kwara State of Nigeria was traced to this problem.

Ineffectiveness of Security Forces/Culture of Impunity: The ineffectiveness of security outfits (especially the Police) is another factor that has encouraged electoral violence. During the pre-election stage of the 2003 Elections for example, a number of politicians were murdered. The Police have been unable to get to the root of these killings. This failure seems to be creating a culture of impunity and motivation for recurrence of the crime. It could be argued that the centralized control of the police by the Federal Government contributes to the laissez-faire attitude of the police. This is because the Federal Government seems to tolerate the inefficiency as far as the Police do its bidding.

Weak Penalties: The criminal or penal code of a nation spells out crimes and the penalties or punishment for violators of the code. Penalties or punishment are intended to achieve correction, retribution and deterrence. In Nigeria, there are no specific legislations against certain electoral offences, only for associated acts like arson, assault and murder. The laws for example, have no provision for the snatching of electoral boxes from polling booths (a common crime during elections). Moreover, the penalties for acts associated with electoral violence like assault and arson, are generally weak; a few years imprisonment at most. This has contributed to the culture of impunity and underscores the need to review the extant laws.

Weak Governance and Corruption: Weak governance and corruption are some of the causes of structural violence Galtung [2] in Nigeria, as they exacerbate the effects of poverty and make people desperate enough to seek any means including crime and violence just to survive. This situation seemed to have created a ‘runaway norm’ Pruitt and Kim[6] of ‘tolerating corruption’ at all
levels of government. An average of $4 billion to $8 billion per year was reportedly lost to corruption between 1999 and 2007. Corruption is closely entwined with political violence in Nigeria. Public revenues are not only stolen, but are often used to pay for the services and weapons used for electoral violence. Amongst others, lack of accountability and dearth of social security could be adduced for the level of corruption. The Economic and Financial Crimes Commission (EFCC) set up to fight corruption have achieved some success but more need to be done especially as regards former corrupt top political office holders.

**Small Arms Proliferations:** Another contributory factor to electoral violence is the proliferation of small arms in the country. There were over one million illegal small arms reportedly in circulation in Nigeria as at 2004. These weapons perpetuate violent conflict and create new cycles of violence and crime. The weapons also undermine the work of humanitarian and relief organizations and militate against sustainable development. Dr Aribisala [1] averred that “above all, small arms threaten peace and development, democracy and human rights.”

Electoral violence has also been linked to the proliferation of these arms. The violence that erupted during election must be condemned in totality because it does no one any good. Election is akin to games where winners and losers must emerge and also people must accept the victory and defeat as part of the game. Ugiagbe[12]

**Political Solutions**

The ways for the series of crisis that can be curbed is for our leaders to be transparent and accountable in all their actions and policies. Employment opportunities must be created for the youth that are being used for violence by these politicians. The youth if gainfully employed, will not participate in the unwarranted destruction of lives and properties. Proper education and enlightenment on the need to shun violence could also go a long way in avoiding unnecessary wastages recorded during the crisis. Over ambition by politicians to subvert the will of the electorate is largely responsible for the crisis. And this over ambition shows that their intention to get into power is not for the people they claim to be representing. Rather, it is for their selfish interest, which defeats the purpose of leadership. Security alertness to flash point with adequate logistics and equipments could also help to contend any eventuality. Parents and guardian should be held responsible for any misconduct of their wards.

**Ant-Corruption, Economic and Social Development.** Corruption affects every facet of life in Nigeria; therefore any meaningful developmental effort must incorporate anti-corruption. This could be achieved by emphasizing accountability and prosecuting former corrupt political office holders to serve as deterrence. The problems of poverty/unemployment and underdevelopment could be addressed by pragmatic steps by government towards national economy revival.

**Security Sector Reforms:** The Police have a crucial role of ensuring law and order in any society. To do this effectively however, it must be well trained, structured, equipped and motivated. The Nigerian Police likewise need to be restructured, re-equipped and motivated to play its role in ensuring the consolidation of Nigeria’s democracy. It is important to properly educate Nigerian youths on their roles as future leaders of the country, and also on the dangers of election violence to them, their community and Nigeria.

- Youth leaders should champion the campaign against election violence in their communities, schools, churches, mosques and among their groups.
Youths should show deep interest in election activities and should work with other groups within their communities to protect their mandate.

Governments at all levels should collaborate more proactively with the private sectors to create more jobs for our youths so as to reduce their vulnerability to engage in election violence.

That sensitization and education programme should be carried out to the grassroots to educate them on the dangers of their action.

The Government should motivate and empower the youths both morally and financially by providing soft and short term loans to pave way for self employment (ICT Training).

The federal and state governments should established more mechanisms for reducing the proliferation of arms in the country because availability of arms fuels election violence (Report of the workshop on Youths, 2006).

Good Governance and Electoral Laws Reforms: The underlying problem of political instability is the lack of good governance. Hence, to resolve political instability, accountability, social justice, transparency, rule of law, gender equality and due process must guide governance and leadership. The media and civil society groups have a role in this regard to advocate for these qualities until a desirable state is achieved. Electoral laws reforms would also be necessary, as buttressed by the Electoral Reform Bill, (2010).

1. Constitutional provision that provide the foundation for the key elements of electoral framework including electoral rights and the basic principles of the electoral system.
2. Electoral law that guides the conduct of the elections including the powers of the electoral management bodies and governmental bodies.
3. The election administration must demonstrate respect for the law; be non-partisan and neutral; transparent; accurate, professional and competent and must be designed to serve the voters.
4. The electoral management bodies are established and operate in a manner that ensures the independent and impartial administration of elections.
5. Voters registers are maintained in a manner that is transparent and accurate and protects the rights of qualified citizens to register, and prevents the unlawful or fraudulent registration or removal of persons through the use of ICT.

Despite the political reforms of the government, there are other variables that will allow for the wholesale implementation of credible, free and fair elections, we propose that the information technology will act as solutions to this problem.

Information Technology (IT Solutions and The Way Forward)

Automating an election process, while relying on state-of-the-art in computer and ICT technologies, can significantly mitigate many of the factors that would hamper a healthy progress of a given election process. For automated e-registration processes to be fully acceptable worldwide, several issues must be authenticated/validated, Security, robustness, performance and correctness.
Given the short history of e-registration systems across the world and the inherent limitations in the scope of implementation, it is very difficult to measure the success or failure of any or all of the issues mentioned above. In addition, any voting process is bound by regulations and cultural values that characterize the different casualties involved. Hence, the example of one country may not directly suit the example of another. As a result, it is highly recommended to build a simulation model whereby an e-registration system can be evaluated and various attributes adequately assessed before one is deployed.

According to Mohammed, Khwasaneh, Omar Al-jarrah and Barakat in their work, they introduce a simulation model, where the main factors which directly contribute to the success of a registration process are discussed. The simulation parameters can be changed based on the peculiarities of any entity. The main components of the architecture of the model are shown in figure 1. This is a client/server web-enabled architecture.

![Client and Server-side software systems](image)

**Fig.1 :Client and Server-side software systems**

The server side hosts the central database for the voting as well as the candidate population (registration). The server also collects basic statistics related to an ongoing election process (some statistics can be turned on or off based on the needs and requirements of each election unit). Besides the main functional properties of a registration| voting system, the e-voting system must cater for several essential non-functional requirements. Of utmost importance are the requirements for correctness, robustness, coherence, consistency, performance and security.

The client side represents a voting station, where voters cast their votes. Note that the hardware on the client side includes 10 devices for verification and authentication (e.g., images scanners, ID card readers, finger print reader, etc.) In addition to that, two more requirements are necessary. In order to reduce the traffic rate on the network links, a local database at the client side is required to host the data which pertains to the local voting center. This database (DB) is a rather dynamic one, in the sense that the data stored in its tables may vary over the election time period. The size of the local
The use of a local DB enhances the performance of the voting process. However, this approach creates a synchronization problem, which he also addressed in this work. The alternative is to use one centralized DB. The voter does not have an insight on how his/her vote is translated and/or tallied. In a paper-based election, the ballot is filled out by the voter and dropped into a sealed box by the voter himself/herself. Voters are counted in the presence of candidates or their representatives.

The identification of a voter is done via a card reader which reads off his/her official ID card and retrieves the voter record from the local DB (on the client side) or loads the record from the central DB if it is not already in the local one. Records are loaded dynamically from the central DB to the local DB’s either on demand or on a pre-fetch basis. The voter record includes, amongst others, a biometric description of the voter in question. This could be fingerprint authentication method (other methods can be added to the mode). The voter will be rejected if his/her fingerprints do not match the stored record. In order to reduce false rejections, we store for each voter several copies of his/her fingerprints are stored as an encoded text in order to reduce storage consumed by images. This dual process should guarantee that no voter can falsely impersonate another. Note that the use of fingerprints or any other scanned image directly impacts the message size and hence the performance of the network. Hence, a distributed database approach is preferable over a centralized approach.

The accuracy and correctness of the e-voting process can be further jeopardized if the same voter casts two or more voters, or a vote is not properly added to the overall count of the right candidate. Such mishaps may come about as a result of synchronization conflicts at the central DB level. In order to prevent two or more voters per voter, we use a “voting status flag” in the voter record. This flag is initialized to FALSE. The voting status flag is set to TRUE in the central DB whenever a voter identity is verified (before authentication takes place). If the authentication fails, the flag is reset to FALSE. If the voter leaves the station without completing a vote, the flag is also reset to FALSE; thus allowing the voter another chance to try again and cast his/her vote. If the voter successfully completes the voting process, the flag remains set to TRUE. Note that even if the result of the vote is not committed to the central DB in due time, the flag in the voter’s central record is set to TRUE, thus eliminating the possibility of another attempted voting by the same voter, or by someone who carries a counterfeit ID card. This requires that whenever the record of a voter is accessed for identification, even when the record is found at the local DB, the flag on the central record must be checked. If it has already been set to TRUE, the voter is denied access and his/her attempt fails to go through. If two people carrying the same ID card (one is authentic while the other is counterfeit) attempt to vote simultaneously, the first one to access the record will set the flag to TRUE, load the record and prevent the other one from accessing the record. Of course, if the one with the counterfeit card obtains the record first, the vote cast will fail at the next authentication step. It is possible that a record gets loaded into two different voting centers due to block transfer from the central DB into local DB’s. When a voter attempts to access the record from any of the stations, the client will verify the central record flag. If it has been set to TRUE, access is denied; otherwise it sets
the flag to TRUE and access is granted. Note that simultaneous requests to the same record will be synchronized by the DB query serialization process (only one query may access any table at any given time). This mandatory check of the flag in the central DB will add extra overhead on the network. This overhead is already included in reflected into the ensuing simulation.

Another synchronization resolution is required when a vote is to be tallied into the record of a candidate. If candidates are being selected by several voters at the same time, then a certain assignment plan needs to be put in place so that all votes will be tallied (no misses) and added to the candidate’s record. Again, we use a “COUNT” flag/muted for the candidate’s record. The COUNT flag is initially set to FALSE. When the record is selected by a voter, the flag is set to TRUE until the record count is updated, then the flag is reset to FALSE. All votes for the same candidate will be queued until the flag is reset to FALSE. In order to improve the ‘hit’ performance, a counting semaphore COUNT can be used instead.
A copy of the vote will be printed only when the vote is successful and the candidate’s record is updated. This requirement, initially made for transparency purposes, provided a final test for the accuracy and correctness of the process, especially in the presence of thread hang-ups. Figure 2 shows a flowchart of the voting model.

Communication using computer has brought a revolution in the world of information technology, particularly in the field of personal computer (PC). A Network is a way or means of transmitting or receiving (exchange) information from one or more sources. It provides the means for locating and transporting information.

In computer networking, the origin of information request utilizes the services of a network to locate and return the information. This is done with addresses. The address identifies the network resources. There are two popular architectures for networking, hierarchical and peer. The entire computer network can be classified into two broad categories (however, elaborate categorization exists), they are LAN (Local Area Network) and
WAN (Wide Area Network). The benefit of computer networking includes, but not all; file sharing, sharing of peripheral devices such as printers, fax machines and scanners, manufacturing process control, data management, web browsing as well as voice and video communication.

This means that data can be used by all INEC applications. Data is input only once, thereby eliminating input errors from multiple entries of the same data. The INEC server should be installed at the INEC Headquarters (Abuja Server) which link to the units, wards, local government and states. The diagram below show the major areas of INEC e-Voting system

Sequel to these lapses and setbacks associated with manual registration system, that triggered my interest to develop or devise an electronic registration and voting system that will reduce to the barest minimum (if not eradicate) election rigging and other related electoral malpractices. Therefore, e-registration and e-voting is only practice in Nigeria by the media that is virtual.

**Fig. 3: Architecture of the E-voting System**

The IT-Based solutions; we introduced an e-voting system that controls the following:
- Central, In-house database
- Data is input only once
- Real-time reporting of all transactions from various units, wards, local governments and states
- Direct availability of all data to external applications via web programming. Every transaction made in the system is summarized and place
into a transaction log. You can view every time in the same details it was input into the system.

- The relational database is common to all INEC applications and locations in the thirty six states of the federation

**Summary and Conclusion**

The Government of Nigeria should do the following:

a) Emphasize accountability and prosecute former corrupt political office holders.

b) Remove the ‘immunity clause’ from the Constitution and institute a viable social security regime.

c) Ensure capacity building for the Police and other security agencies as well as increased cooperation in the area of small arms proliferation.

d) Ensure the Electoral Reform Bill is review again to see the grey areas before 2015 Elections.

e) The International community should pressure Nigeria to intensify the anti-corruption fight by avoiding selective justice.

f) The media and civil society groups should pressure Nigerian government to ensure that accountability, social justice, transparency, rule of law, gender equality and due process are adhered to.

g) Proper education on the use of ICT tools to fore stall riggings, multiple votes etc

**Conclusion**

Nigeria is in a critical dilemma in its political history. The country has witnessed poor political leadership as a result of flawed elections. The electoral standards which contribute to uniformity, reliability, consistency, accuracy and overall professionalism in elections have been abandoned in Nigeria elections. But there is now a real possibility to conduct credible, free and fair elections in Nigeria with the new elections electoral law and a credible, respected and radical leadership of Commission (INEC). INEC has a responsibility to rise up to the challenge by keeping faith with its vision, mission and principles. In addition, all stakeholders including citizens must perform their roles to make Nigeria the actual giant of Africa that is worth emulating.

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