ELECTORAL TECHNOLOGY AND CREDIBLE ELECTIONS IN NIGERIA: A STUDY OF THE 2023 PRESIDENTIAL ELECTION

Peter, ThankGod Oyinmiebi
Department of Social Studies,
Isaac Jasper Boro College of Education, Sagbama, Bayelsa State
&
Preye Kuro Inokoba (PhD)
Department of Political Science, Niger Delta University, Bayelsa State
preyesoffice@gmail.com

Abstract
The use of technology in the conduct of elections has stirred heated debate from scholars, policy makers and the public in Africa. Unlike other parts of the world where the adoption of technology remains a cornerstone for credibility, integrity, trust, transparency and fairness; in Africa and Nigeria, the use of technology has raised concerns and distrust for the electoral system. The inability of electoral technologies to improve the outcomes of elections and consequently facilitate democratic trust has raised a lot of questions such as: Is Africa and Nigeria ripe for electoral technology? What are the factors affecting the use of electoral technology in Africa and Nigeria in achieving credible elections? Does Africa or Nigeria lack the capacity to conduct credible elections despite the potential that electoral technology offers? The existing literature show that scholars are both hopeful and sceptical about electoral technology in the continent as shown in reports from the Democratic Republic of Congo, Ghana, Kenya and recently Nigeria. This paper used the recently concluded 2023 presidential elections in Nigeria and seek to provide both theoretical and empirical answers to these questions and data was collected from qualitative sources; the paper argued that while election technology offers the country avenues to block the loopholes that negate credible elections in the country, the culture of impunity, trust deficient in country's electoral system are drawbacks to the effectiveness of technology on elections in Nigeria as shown in the 2023 presidential elections.
Keywords: Credible elections, Election, Electoral technology, Africa, Nigeria, the conduct of elections

Introduction

All over Africa, the conduct of election and its outcomes have been plagued with the lack of credibility (Osei-Afful, 2017). The challenges of conducting credible elections are such that that elections are characterised by erroneous and manipulated voter registers, under-age voting, problems of voter identification, partiality of the election management bodies (EMBs), manipulation of results, use of the state security forces, electoral violence, ethnic and religious campaigns that malign a group or individual, lack of fairness and uneven playing field for contestants, use of militia and thugs, etc. As a result, elections and election credibility are compromised.

The lack of credibility in Africa's electoral process has thrown the continent in political instability, governance crisis, coup and counter-coups, government without legitimacy and other broader issues that tend to negate the consolidation of democracy and fast-track development in the continent (Chilaka &Oyinmiebi, 2021). However, credible elections and the credibility of the continent and Nigeria's electoral process remains significant in building efforts for stability, erecting institutions and systems that supports and enhances the deepening of democracy in the region and country (Osei-Afful, 2017). In recent times, scholars (Gelb &

Clark, 2013; Gelb & Decker, 2012; Golden, Kramon& Ofosu 2014; Mugica, 2015) have argued that the adoption of technology strengthens the electoral process, institutions and ensures sustainability of electoral reforms which are essential for the conduct of credible elections in Africa and Nigeria (Iremeka, 2023; Fatai, 2023; Angalapu, 2023)

More so, the use of electoral technology globally as a safeguard for ensuring electoral credibility, according to Adelaja (2023) has become widespread and gained significant attention. As the world continue to ensure that the outcomes of elections reflect the core values of democracy, adopting technology has had significant impact on the entire electoral process (Ogunyemi, 2023; Odote&Kanyinga, 2021; Gleb & Clark, 2013; Yard, 2010). Ogunyemi (2023) have argued that electoral technology has significantly altered the voter's registration, voting, collation of results, result dissemination and monitoring processes which constitute the foundational basis of the electoral process. Therefore, a critical argument for the adoption of technology in election is its capacity to stir trust, transparency and accessibility (Yeboah, 2023).

Similarly, across the African continent, countries have come to put their trust in the reliability of electoral technology in achieving credible elections (Cheeseman, Lynch & Willis, 2018). The continent has seen the widespread deployment of different forms of digitised processes in improving electoral conduct in the continent. Some of electoral technologies been used include such as biometric verification system, electronic equipment, software programmes, computers, optical scanners, the internet in Kenya (Odote&Kanyinga, 2021;Mugica, 2015). Nigeria adopted the use of the Bimodal Voter Accreditation System (BVAS) (Fatai, 2023), in Ghana, the country introduced the use of USSD for voter registration appointment (Omodiagbe, 2020; Ofori, 2020) which has so far been implemented to improve the conduct of elections. The digitisation of the electoral systems continued to be praised and concerted efforts by national and international organisations to support it towards credible elections has been on the increase (Oberabor, 2023).

However, the adoption of technology for the conduct of credible elections in across Africa has been greeted with applause and scepticism (Ifeanyi-Ajufo& Hoffman, 2023). While scholars have argued that electoral technology is critical in addressing the age-long challenges of transparency, fairness, integrity as well as deepened trust in the bid for democratic consolidation, others have argued that technology itself is just another tool open to manipulation, control by incumbency and given the weakness of the cyberspace in the continent, susceptible to hacking (Ifeanyi-Ajufo& Hoffman, 2023; Odote&Kanyinga, 2020, Extensia Report, 2023, Aworinde, 2023). Therefore, electoral technology involves the range of technologies used in the conduct of election. It covers technology that assists all facet of the electoral process such as voter registration, voter identification, voting, collation of results and transmission.

The elections conducted in Africa such as in Democratic Republic of Congo, Ghana and Kenya and recently Nigeria have raised these divergent concerns. Our focus in this paper is to interrogate further the use of electoral technology in Nigeria by presenting data to support the arguments. As recent as 2022, the Independent National Electoral Commission (INEC) announced the approval of the use of Bimodal Voter Accreditation System (BVAS) as a game changer away from the previous system of conducting election. The BVAS provided two-factor verification systems such as fingerprint and facial recognition accreditation process that limits frauds. According to Fatai (2023) the commission also introduced a digital system that allows for collation and transmission of results known as INEC Result Viewing Portal (IReV) (Kwen,

2022). Despite the goal of these systems to ensure credible elections the outcome of the polls have left scholars and the public wondering and in even more concerned about the credibility of future elections in the era of technology in Nigeria (Egbejule, 2023; Rajvanshi, 2023).

Conceptual Review: Electoral technology and credible election

As democracy gained more momentum around the world, the concept of elections has become a very commonly used term among democratic observers and scholars. Election can be described as a pivotal mechanism through which citizens participate in their polity and democratic rule is delivered (Garnett & James, 2020). Broadly, elections facilitate the transition or change of government that allows citizens to evaluate and chose their preferred candidates or party (Oriakhi, Chilaka &Oyinmiebi, 2019). On their part, Okoye and Oyinmiebi (2021) argue that a functional liberal democracy is judged by the type of election conducted. Hence, election is the benchmark for formalization of leadership recruitment and succession in democratic societies. Based on the above, Okolie (2005, p.436) observes that "election confers legitimacy on public office holders and subject public office holders and political parties to periodic assessment; by doing so, it enhances accountability and good governance". Therefore, until elections reinforce the values of democracy which allows for the transparency, choice, fairness, freedom, rule of law and due process; credibility remains lacking (Diamond, 2008; Oriakhi, Chilaka &Oyinmiebi, 2020; Okoye &Oyinmiebi, 2021).

In Africa, and much of Asia the conduct of elections constitute a factor that ignites political and social conflict (Okwueze, 2022). As technology, continue to address the social, economic and political problems around the world, the call to adopt technology and Information Communication Technology (ICT) became an adoptable solution (Ogunyemi, 2023). Also, the use of technology in Western democratic societies and its successes in delivering credible elections and its transparency has further made it a buzzword that has attracted a lot of attention (Okwueze, 2022). Therefore, enabling the adoption or use of technology in elections has become fashionable. The concept of electoral technology has been characterised by the use of different appellations to explain it (Election Knowledge Network, 2023). According to the MIT Election Data Science Lab (2023), electoral technology can be referred to as "voting technology". Others have described electoral technology as "electronic voting" or "e-voting", "ICT-driven elections", "online voting", "cyber elections", etc (Garnett & James, 2020; Maurer, 2020; Ogunyemi, 2023; Odote&Kanyinga, 2021). According to Haibo (2019), electronic voting refers to a system of voting in an election that involves the use of electronic methods for submitting and tallying votes. Electronic voting offers efficiency and cost-effectiveness in conducting voting, particularly when dealing with large amounts of data in real-time, while also emphasizing the need for robust security measures. This type of voting, eliminate the risks of fraud, irregularities and manipulations that may alter the outcome of the election.

According to Maurer (2020) electoral technology consist of digital solutions in solving the democratic challenges of conducting elections. Evidently, Maurer argued that electoral technology involves a broad range of "digital solutions" adopted in the electoral cycle, which covers registration, voting, collation and other activities. Digital solutions are already employed across different stages of the electoral cycle by various stakeholders such as election management bodies, voters, political parties, the media, and more. These solutions encompass technologies like geographic information systems, electronic registers and voting machines, optical scanners, e-transmission of results, electronic signatures for initiatives and candidate lists, result consolidation and visualization systems, and statistical methods for result evaluation and fraud detection. These digital solutions are based on digitized information.

Additionally, other digital technologies being explored include biometry, blockchain, cloud computing, and artificial intelligence (p.7). Ogunyemi (2023), emphasise that electoral technology is seen as the utilisation of biometric technology, such as fingerprints and facial recognition, in order to ensure voter authentication, result accuracy, and efficiency of the election management bodies that prevents fraud and other malpractices that affect credibility.
The basis for adopting electoral technology is focused on ensuringthat the characteristic of credible elections are secured and attained. According to Oyeneye (1998), a credible election is one that is conducted without any instances of rigging or electoral fraud. In such an election, eligible voters have the freedom to vote for their preferred candidates and political parties without facing coercion or intimidation. Credible elections are characterized by the following:

a) Inclusiveness: Elections should provide equal opportunities for all eligible citizens to participate as voters and candidates, allowing them to choose their representatives in government.
b) Transparency: Credible elections ensure that every step of the process is transparent and open to/for scrutiny. Stakeholders should be able to independently verify that the election is conducted honestly and accurately.
c) Accountability: Citizens have the right to hold various electoral stakeholders, including the government, election management bodies (EMBs), political parties, candidates, and security forces, accountable for the outcome of the election.
d) Competitiveness: Credible elections allow citizens to compete fairly and equitably for government positions. It ensures that political competition reflects the genuine will of the people (Okoye &Oyinmiebi, 2020, p. 212).

A credible election is described as one that is free from fraud, allows for equal participation, maintains transparency, holds stakeholders accountable, and promotes fair political competition. Credible elections can be defined as electoral processes that are characterized by several fundamental attributes. Firstly, credible elections require universal suffrage, granting all eligible citizens the right to vote without discrimination based on race, gender, religion, or any other arbitrary factors (International Foundation for Electoral Systems, 2020).

Secondly, credible elections demand the freedom of expression, enabling individuals to voice their opinions without fear of repression or intimidation (International Institute for Democracy and Electoral Assistance, 2012). Lindberg (2001) supports the aforementioned perspectives by defining a credible election as a democratic one. In this context, credible elections are those that strictly follow the provisions outlined in the electoral law and constitution. They should be characterized by transparency, fairness, justice, and equity, with minimal interference from the incumbent leadership. Essentially, a democratic election should be free from electoral violence.

Literature review: Electoral technology and its Contending debates

Extant literature on electoral technology and credible elections in Africa, and Nigeria are characterised by contending perspectives. In discussing electoral technology in election credibility in Africa and Nigeria, Cheeseman, Lynch and Willis (2018) bemoan the "festishisation" of technology in solving the problems of election credibility in the continent. Therefore, diverse perspectives and argument defines the adoption of election technology in the continent. The dominant perspectives are grouped as follows; first, is the argument that electoral technology or the use of technology in elections are a way out of the difficulties that most African countries face in the conduct of free, fair and credible election (Ogunyemi, 2023; Yeboah, 2023). This argument is derivable from the logic that technology limits the subjective influence of human in the conduct of elections (Cheeseman et al., 2018; Evrensel, 2010; Gelb & Clark, 2013; Jacobsen, 2019). These scholars, are referred to the "optimist". The optimists

of electoral technology (Gelb & Clark, 2013; Gelb & Decker, 2012; Golden et al., 2014; Mugica, 2015) are of the view that technology has improved other aspects of human civilization, hence, the adoption of electoral technology will advance credibility by improving effectiveness, efficiency and trust in electoral outcomes.

According to Cheeseman et al., (2018), the use of technology in elections in Africa has been a significant step towards reducing the level of human manipulations in rigging the outcomes of elections. Cheeseman, et al., (2018) argued the increasing use of technological innovations in election in Africa such as biometric systems, optical scanners, and other digital equipment has improved credibility, security and transparency in the electoral process across some African countries. Gelb and Clark (2013) added that electoral technology has enhanced the level of efficiency that election conducting agencies previously lacked in the continent. Efficiency in voter registration, collation of results, dissemination of results has improved as a result of the adoption of technologies. In the same vein, Jacobsen (2019) noted that in Africa, conducting free, fair and credible election has been problematic, violent prone and rigged, hence, the adoption of electoral technology in Africa has contributed to the increase in trust for both the electoral umpire and institutions. He argued that electoral transparency, integrity and trust are some of the critical values that electoral technologies continue to add to the conduct of elections in Africa. Scholars such as Evrensel (2010) added that electoral technology in the conduct of elections in Africa has further aided in boosting legitimacy of governance and government in the continent. His argument stems from the fact that most elections in Africa are riddled in irregularities and often times, this cause in a legitimacy crisis for the elected governments from these elections. Therefore, by closing the loopholes that could easily be manipulated, electoral technologies are solving the legitimacy problem in Africa.

In addition, Nwangu, Onah and Otuh (2018), argued that the evidence of this argument is clear in as the use of electoral technology and the digitization of most of the electoral process has doubled in the last decade. Elections across Africa in 2018 shows that nearly half of the "national elections" are using one form of electoral technology to improve their electoral process such as the widespread use of "biometric system" in the registration of voters, or their identification during voting as well as the adoption of electronic mode of results transmission which is considered more credible (Odote&Kanyinga, 2021). As such, the digitizing of elections in Africa and Nigeria where tribalism, ethnicity and corruption hampers integrity and trust can be restored. Also, the use of technologies holds the potential in mitigating such bias, hence, enhance credibility.

However, "pessimist" scholars such as Amoah, 2019; Cheeseman and Klass (2018) has criticised these arguments. They noted that these arguments failed to take account of the fact that elections are human affairs and humans control technology. Thus, electoral technology is insufficient in ensuring credible election (Ifeanyi-Ajufo& Hoffman, 2023; Odote&Kanyinga, 2021). According to Amoah (2019), it is erroneous to assume that the introduction of electoral technologies leads to the improvement in the conduct or administration of election or the assumptions that by adopting technology, elections results will be credible. The fact that electoral technologies are often times confounded with logistical, human and operational intervention opens it to manipulations. Also, Adofo (2016) reported that in the 2016 elections in Ghana, the adoption of electoral technology was fraught with hacking, human indiscretions and manipulations. Thus, Cheeseman and Klass (2018) argued that electoral technology has the tendency to enhance electoral efficiency in the conduct of elections but cannot resolve imminent political problems that may result from the errors of technology.

Flowing from the above, the "pessimists" scholars (Hobbis&Hobbis, 2017; Nwangwu et al., 2018; Odote&Kanyinga, 2021) argue that technology is an exploitable tool and prone to the manipulation of the dominant political class (Garson, 2006). They further argued that elections in Africa have been prone to the capital and clientelist influence of the political class, hence, the control of technology can easily be captured in the manner the African state is captured (Ezebuenyi, 2014). Therefore, Odote and Kanyinga (2021) in advancing the reinforcement theory argues that electoral technology are tools that can be exploited to serve those in power, achieve their goals or used as a means to their end – that is winning election or sabotaging their opponent. They argue that the use of electoral technology has the tendency to uphold the structures of the dominant political class (in most cases in Africa, the incumbency).

The above reinforces the arguments of the second group of scholars that holds that election credibility is founded on trust, integrity and fairness, which are human values. Therefore, the use of technologies as a standalone factor would not yield results given the state of African elections where trust, integrity, rule of law and obedience to rules have been deficient over the years since the return to democracy in most of the countries. A third argument surfaces which is more nuanced (Angalapu, 2023). The argument noted that the impact of technology in promoting credible elections are undeniable as seen around the world especially in developed democracies, but these technologies function on systems and institutions built on trust, independence and impartiality. These systems do not respond to the whims and directives of the incumbent as evident in the conduct of elections in Africa and Nigeria.

Electoral technology and Elections in Africa

The conduct of elections remains a foundational basis of instituting democracy (Okwueze, 2022). The use of electoral technology in Africa and Asia in the conduct of their elections has gained momentum in the last 20 years. As the world continue to pay attention to the quality of democracy around the world and in areas where the conduct of credible elections has remained contentious; deploying technology have been observed to be a solution to this quagmire (Okwueze, 2022; Oriahki, Chilaka &Oyinmiebi, 2019). According to Chilaka and Oyinmiebi (2020), the use of technology in the world has radically transformed the processes of human lives, service delivery and the way government perform the core functions in meeting the needs of their citizens (Oyinmiebi, Ogbor&Otonbara, 2020). Therefore, in order to salvage the poor history of elections in Africa and the crisis of electoral credibility in the continent which is associated with political instability and poor governance, the call for electoral technology became critical (Chilaka &Oyinmiebi, 2021; Odote&Kanyinga, 2021; Okwueze, 2022).

According to Iwuoha (2018), conducting elections that are described as credible, free and fair has remained a herculean task in most of Africa's democracies. Elections in Africa has been characterised by several forms of anomalies such as rigging, violence, malpractices, etc. In order to improve these conditions, several African countries have adopted technological innovations and systems (Gelb & Clark, 2013). As such, the widespread adoption of Biometric Identification System (BIS) in over thirty-four African countries shows a commitment to the use of electoral technology. It has also been reported that there have been successes in the use of digital technology in countries such as Ghana, Mali, Kenya, Cameroon, Sierra Leone, Mozambique, Zambia, Malawi, Rwanda, Senegal, and Mauritania (Iwuoha, 2018).

Ross and Lewis (2018), in their report noted that in Congo, electoral technology was praised to be the much-needed solution to the multidimensional problems facing elections in the country. They reported that the electoral body noted that the adoption of electoral technology will reduce the oversize cost of conducting elections, reduce to the barest minimum cases of

fraudulent practices in the election. In addition, the use of electoral technology will serve as a more reliable option for accurate counting of the votes and ensure authenticity of result. Sadly, the adoption of the technology in Congo raised suspicion from opposition parties and candidates of the ploy of the ruling party to manipulate the election despite the failure of machine to meet acceptability test.

The inability of election technologies to improve the outcomes of elections and consequently facilitate democratic consolidation in Africa has continued to raise a lot of critical questions such as: Is Africa and Nigeria ripe for electoral technology? What are the factors affecting the use of electoral technology in Africa and Nigeria in achieving credible elections? Does African countries or Nigeria lack the capacity to conduct credibility elections despite the potentials that electoral technology offers? To this end Odote and Kanyinga (2021) have argued that the use of electoral technology in Africa "can promote public confidence or damage the credibility of elections altogether".

Cheeseman et al., (2018) emphasised that in Africa, electoral technology has been exploited to give the incumbent more leverage over the others which have further questioned the purpose of electoral technology as a tool for reducing electoral malpractices in Africa. It is on this basis that Ifeanyi-Ajufo and Hoffman (2023), and Odote and Kanyinga (2021) pointed out that technology in Africa is now the new theatre used in perpetrating electoral fraud during elections in the continent. Odote and Kanyinga (2021) described electoral technology in Africa as a "black box" which does not enhance or achieve credibility but rather complicates it. They noted that when electoral technologies are compromised, it damages both the legitimacy of the outcome and that of the government.

Also, studies have shown that contest of election in Africa has gone beyond the capture of the state machineries and resources as it were in the past. Presently, it involves the capture of the electoral technologies of the country (Amoah, 2019; Debrah et al., 2019). Hence, Amoah (2019) argues that in Africa, the control of utilization of electoral technology "is the new battle ground" by the contesting parties with the incumbent having advantage. In addition, these studies show that manipulation of the electronic computation and transmission of results has been critical in deciding presidential elections. This has meant increased contestations over the procurement of technology, and how it is securely utilized by the election management body in the transmission of results. These contestations result from the recognition that whoever controls the deployment of election technology, and especially the electronic computation of results, may take advantage and turn the technology to their own ends and win (Odote& Kayinga, 2021). On the other hand, whoever loses control of the electronic computation of results loses the election (Amoah, 2019, p. 69). This control oftentimes begins by gaining influence over the electoral management bodies so as to direct decision-making about the technology, its procurement, deployment and utilisation.

Angalapu (2023) suggested that while it is undeniable that electoral technology has the potential to solve some of the challenges the continent's electoral democracy suffer, the problem of trust in the electoral institution by the citizens remains lacking. He added that in Nigeria, electoral technology has facilitated increase number in voter registration and a major factor considered driving the youths who have been disenchanted in the outcomes of the previous elections to participate in the 2023 presidential elections. Fatai (2023) added that it has eliminated some form of irregularities; Yeboah (2023), have noted that the quality of implementation and capacity of the electoral umpires will remain a major factor.

Odote and Kanyinga (2021), emphasised that in Africa, the "adoption" and utilization of electoral technology have been burdened by series of different challenges. These challenges have reinforced the fact that the notion of electoral technology is a fixer to the crisis of credible elections in Africa. More so, in Africa even the use of electoral technologies have had issues of "periodic breakdowns, unreliability, rent-seeking and vendor wars, all of which combine to undermine the potential of technology to make elections credible". The point above emphasised the contention of Angalapu (2023) that the conduct of credible elections in Africa suffers from human, trust and integrity problems and not a technology problem.

Odote and Kanyinga (2021) summarised the foregoing contentions succinctly by noting that:

> when election technology is well-managed and -implemented, it can reinforce trust in elections and boost voters' confidence in the electoral process. This in turn improves democratic participation. However, technology is subject to human behaviour and may be manipulated by politicians and election officials to promote the self-interest of powerful individuals and their political parties. In this latter instance it reinforces the divisions in society and provokes rather than solves disputes and attendant violence. This implies that the political context on which technology is deployed matters.

They also adding that:

> Where the framework for political competition is based on democratic values and principles, technology will promote a transparent electoral process. Where the context is one characterised by competition over control of political power to advance ethnic and other sectarian interests, use of technologies may be manipulated by powerful political elites to consolidate their rule by validating elections that are generally conducted on a weak infrastructure. The fact that technology is a tool that can be used to either build trust in the electoral process or reinforce certain outcomes suggests that technology does not in itself contribute to credible elections.

According to Oyedunn, (2023), there is a global disillusionment with election technology as exemplified by the legal action taken by Raila Odinga, the second-place candidate in Kenya's 2022 presidential election. Odinga's lawsuit implies that the widespread implementation of electoral technologies did not effectively reduce incidents of election rigging. This case highlights concerns regarding the efficacy of technology in electoral processes. In fact, evidence suggests that technologically advanced countries are becoming more cautious about fully transitioning to election technology. Some countries, like Germany, are even scaling back their use of such technology due to security risks. This growing apprehension reflects a broader scepticism and recognition of the limitations and potential vulnerabilities associated with relying solely on technology in elections.

Election Technology in Nigeria

In Africa, Nigeria operates the "largest democracy" (Ifeanyi-Ajufo& Hoffman, 2023). As such, the conduct of credible election in the country occupies a serious place in the world's image of the continent. In the past, the conduct of credible elections in Nigeria has been considered a tall order, with the previous cycles of election (1999 – 2019) falling below expectations (Okoye &Oyinmiebi, 2020). Elections in Nigeria are fraught with irregularities, contentions, fraud and violence that undermine credibility and democracy (Inokoba& Rufus, 2021). The introduction of technology through several electoral reforms has been greeted with widespread applause.

Ogunyemi (2023) argues that the adoption of technologies in Nigeria is critical in affecting the value chain or process of conducting elections in the country. Electoral technologies are

important in changing the face of elections over the world as technologies transforms the processes of voter registration, collation of results and dissemination of results. The smoothening of the entire process of elections through technology positively impacts the "various elements of the Electoral System Value Chain".

The digitization of election in Nigeria, according to Fatai (2023) can be traced back over a decade ago. The first attempt at introducing technology in the electoral process in Nigeria was in 2011 through the automated fingerprint identification system in order to curtail multiple voters' registration. Despite, its basic level, the automated fingerprint system is considered the country's foremost adoption of electoral technology. Also, in 2015, the initiation and the use of permanent voter's card and the smart card reader's technology for identity verification pushed Nigeria's electoral system a step forward in digitizing elections in the country.

The use of electoral technologies in Nigeria and elsewhere in Africa is a product of reforms aimed at addressing the shortcomings of the electoral system in the country. In Nigeria, one significant change that the different reforms so far initiated and implemented has been the modernisation of the electoral process in order to reduce and (ambitiously) eliminate irregularities and ensure credibility, integrity and trust in the outcomes of election. As such, what constitutes the history of electoral technology in Nigeria is simply the history of electoral reforms.

Angalapu (2023), is of the view that the Electoral Act of 2022 granted the Independent National Electoral Commission (INEC) extensive authority to utilize election technology. The introduction of the Bimodal Voter Accreditation system (BVAS) and INEC's Results Viewing Portal (IReV) has been praised for improving the transparency and accessibility of election results, with the aim of curbing electoral fraud. The BVAS is an electronic device intended for reading and authenticating Permanent Voter Cards (PVCs), while also uploading result images to the IReV, an online platform that publishes results for public viewing.

Yeboah (2023) noted that, one of the notable innovations in electoral technology in Nigeria is the Bimodal Voters Accreditation System (BVAS) and the INEC Result Viewing (IReV) portal. The BVAS is a digital device that verifies and accredits voters using fingerprint and facial recognition technology. It replaces manual voter verification, which was susceptible to abuse and enabled multiple voting by a single individual. Additionally, the BVAS captures images of the polling unit result sheets (Form EC8A) and uploads them online. The IReV portal serves as a centralized repository where all result sheets from each polling unit are uploaded immediately after the vote counting process. This allows voters to view the results and theoretically prevents any alteration of the results. These innovations aim to enhance the transparency and accuracy of the electoral process by eliminating voter fraud and providing immediate access to election results. However, it is important to acknowledge that the effectiveness of these technologies depends on proper implementation and safeguarding against potential vulnerabilities (Abdulrahman, 2023; Ifeanyi-Ajufo& Hoffman, 2023; Yeboah, 2023).

The outcome of the use of electoral technology in 2023 presidential elections in Nigeria has gotten diverse reactions (Fatai, 2023; Angalapu, 2023). According to Ifeanyi-Ajufo and Hoffman (2023), the use of electoral technology in Nigeria is considered a litmus test in testing the capacity of African countries in making concerted efforts at consolidating democracy. They added that in Nigeria, the integrity and efficiency of the electoral body, INEC both in terms of

"robustness, efficiency, security and preparedness of its infrastructure, devices, software and human agents" were put to intense scrutiny in the 2023 presidential elections.

With the recent conduct of 2023 presidential elections in Nigeria, some of these issues have been re-echoed. The recent electoral reforms in Nigeria had as one of its significant contributions to the administration the introduction of the Bimodal Voters Accreditation System (BVAS). Nigeria's electoral umpire, INEC, argued in 2023 presidential elections, electoral technology (BVAS) will play a defining role in the reduction and elimination of irregularities in the polls. As such, the use of technology will ensure electoral integrity, inclusion and credibility in the country's electoral process (Chatham House, 2023).

Sadly, the excitement that occasioned the widespread acceptance of the use of technology in Nigeria's electoral process has led to a dysphoria. The use of electoral technology has only culminated in doubts. These doubts are borne out of the questions from citizens bordering of the readiness, capacity, independence and credibility of the electoral institutions in conducting credible election through the use of technology. Thus, these doubts are suggestive of the argument put forward by Amoah (2019), and Cheeseman and Klass (2018), that the management of electoral technology is a critical determining factor for ensuring electoral credibility in a country. Similarly, Odote and Kanyinga (2021) the management of electoral technology suggest the electoral commission have address the challenges of implementation, logistics and the block all means that would enable the deliberate manipulation of the technology to alter the electoral outcome. They suggested that the effective utilization of electoral technology by the electoral umpire must address both electoral and political challenges.

Other scholars have raised other factors that have hampered the smooth deployment of electoral technology in Nigeria, such as weak internet and broadband connectivity (Udegbunam, 2022; Adepetun, 2020; Fatai, 2023; Yeboah, 2023); cost of electoral technology (Okwueze, 2022; Odote&Kanyinga, 2021; Ifeanyi-Ajuko& Hoffman, 2023); Logistic and preparedness of the electoral bodies (Angalapu, 2023); weak cybersecurity and susceptibility to hacking (Independent National Electoral Commission, 2023) and trust deficit in the electoral system (Angalapu, 2023; Abdurahman 2023).

Okwueze, (2022) added that, in the management of electoral technology for the conduct of election the role played by the election management bodies is critical differentiating factor in facilitating smooth transition, resolving crisis and the tendency for violent disturbances over dispute. Evidently, trust in the capacity of the election management body will reinforce trust in the use of election technology. In Nigeria, as the trust continue to dwindle from the experience of previous conduct of elections and the ability of the ruling political class to co-opt the election management bodies, it is difficult to trust technology, hence the crisis of trust hampers technology (Angalapu, 2023).

2023 Presidential Elections and the Experience of Electoral technology

The 2023 election marked a critical juncture in the democratic process of Nigeria, as it witnessed the implementation of the Biometric Voter Authentication System (BVAS) with the objective of enhancing the credibility and efficiency of voter identification. According to Odinakalu (2021), the BVAS technology integrates various functions such as voter enrolment, voter accreditation, and result interface into a single device. Odinakalu (2021), argues that the BVAS technology has the potential to eliminate the loopholes that allow for manual manipulation of election numbers. The voter accreditation feature combines fingerprint, iris,

and facial recognition technologies to enhance accuracy in voter identification and accreditation. Additionally, BVAS is utilized to transmit a real-time snapshot of the result sheet from polling units to the INEC portal, allowing the public to view the information upon accessing the portal (Oyemike, 2023). The demand for the application of BVAS (Bimodal Voter Accreditation system) for the 2023 general elections increased significantly as emphasized by civil societies, stakeholders, and Nigerian voters (Okonji 2023). To demonstrate its commitment to conducting transparent, free, fair, and credible elections, the Independent National Electoral Commission (INEC) has insisted on using BVAS for the 2023 presidential elections. An editorial by The Guardian Newspaper (2022) asserts that making polling unit results accessible enhances transparency and public confidence in the electoral process. Furthermore, the editorial supports INEC's stance on the mandatory usage of BVAS.

Professor Yakubu Mahmood, the INEC Chairman, has emphasized the importance of preserving the integrity of the electoral process in Nigeria (Ogieva & Ajisebiyawo, 2023). In order to achieve this, the commission implemented several new innovations and employed suitable technology. These measures are aimed at safeguarding the sanctity of the choices made by Nigerian citizens during elections. BVAS and IReV technology were electoral technology initiated to address three fundamental issues of election in Nigeria which include;

Voter Registration: One of the crucial steps in ensuring a fair electoral process is accurate voter registration. The INEC has introduced new methods and systems to enhance this process. These innovations may include the use of biometric data, such as fingerprints or facial recognition, to establish unique voter identities. By employing advanced technology, the commission can prevent cases of multiple registrations or impersonation, ensuring the credibility of the voter list (Ogieva&Ajisebiyawo, 2023).

Voter Accreditation: To maintain transparency and prevent fraudulent practices during the polling exercise, INEC has implemented improved voter accreditation methods. These methods may involve the use of smart card readers or other electronic devices to verify the eligibility of voters. By electronically authenticating voters' identities and matching them against the registered database, the commission can effectively minimize the possibility of unauthorized voting and protect the integrity of the electoral process (Ogieva&Ajisebiyawo, 2023).

Result Management: Ensuring the accuracy and efficiency of result management is crucial for maintaining public trust in the electoral process. The INEC has introduced technological solutions to streamline the collation, transmission, and announcement of election results. These innovations encompass the use of secure electronic platforms and dedicated software systems to collect and process data from polling units. By automating result management, the commission can reduce human errors and potential manipulation, thereby upholding the transparency and credibility of the electoral outcomes (Ogieva&Ajisebiyawo, 2023).

The Nigerian Presidential election of 2023, held on February 25th, was anticipated with great optimism and expectations by the Independent National Electoral Commission (INEC) and the citizens of the country. A total of eighteen political parties participated, but the race primarily involved four major candidates: Senator Bola Ahmed Tinubu of the All-Progressive Congress (APC), Mr. Peter Obi of the Labour Party (LP), Alhaji Atiku Abubakar of the People's Democratic Party (PDP), and Mohammed Rabi'u Musa Kwankwaso of the New Nigeria People's Party (NNPP).

However, despite the initial promise by INEC to employ electoral technology to curb electoral fraud and prevent rigging, the BVAS encountered significant challenges, leading to its failure during the election (Fatai, 2023). The use of the Biometric Voter Accreditation System (BVAS) was inconsistent during both the Presidential and National Assembly elections. Abowei (2023) in his explanation of the scenario asserted that;

> the BVAS kits worked well when it came to accrediting voters. The real problems began when it came to transmitting the results of the presidential elections to the IREV portal in real-time. Partly as a result of poor communication of likely timelines, and partly due to unexplained delays, results were slow to start coming in, and never did for some areas, undermining public confidence.

Still speaking on the electoral technology employed by INEC, European Union Election Observation Mission (2023) reported that;

> The certainty and integrity of the INEC Result Viewing (IReV) portal, promoted as a real-time public viewing platform for results transmitted directly from polling units, was greatly tarnished due to failures of prompt transmission and publication of presidential results. In the run-up to the state elections, information about the functionality and specifics of the use of BVAS and transmission of the result forms remained unclear and non-transparent.

INEC's repeated reassurances to the public about the low risk of system compromise, coupled with Nigeria's reputation as a technologically advanced country, make it astonishing that BVAS couldn't access the black box. This failure by INEC to achieve a comparable level of technological proficiency for Nigeria's elections is likely to undermine the public's confidence in technology's ability to safeguard future elections (Oladeji, 2023). Moreover, there have been numerous examples from other African countries that have successfully implemented best practices in biometric technology for elections, highlighting Nigeria's missed opportunity to designate its election systems as key national infrastructure prior to the recent presidential election. Learning from the lessons of the 2017 polls could have been instrumental in this regard (Iremeka, 2023).

Consequently, Nigerians are now grappling with a pervasive sense of uncertainty and doubt regarding their institutions. This recurrent dilemma is particularly disheartening for a country that has strived diligently to establish and uphold democratic values since gaining independence (Abowei, 2023). Many believed that the introduction of technology to secure the voting process would offer a solution to this issue. However, the implementation of the BVAS during the elections fell far short of expectations, leaving many Nigerians disappointed and disillusioned. They express their dissatisfaction, emphasizing that they had anticipated more substantial outcomes than what was delivered (Oladeji, 2023). From their perspective, the use of the new device by INEC was almost disastrous, failing to live up to the promises made by the electoral body. Notably, they had anticipated that final results would be announced within a maximum of 24 hours after the close of voting, as previously explained by INEC (Oladeji, 2023).

The malfunctioning BVAS likely resulted in difficulties for voters who were unable to verify their identities, which consequently prevented them from casting their votes. This situation is highly problematic as it directly violates the fundamental democratic principle of allowing every eligible citizen to participate in the electoral process (Angalapu, 2023; Abdurahman 2023) Furthermore, another issue that arose during the election was over-voting. Over-voting occurs when the number of votes cast exceeds the total number of registered voters or accredited voters in a particular polling unit (Ogieva&Ajisebiyawo, 2023). The BVAS is designed to prevent such situations by ensuring that each voter can only cast one vote. However, due to the malfunctioning BVAS in many polling units, over-voting was recorded, which ultimately led to the cancellation of results in those units (Ogieva&Ajisebiyawo, 2023). The cancellation of results due to over-voting raises concerns about the accuracy and fairness

of the election. It undermines the legitimacy of the electoral process and can erode public trust in the outcome (Oyemike, 2023). Over-voting can occur as a result of intentional manipulation or due to technical failures in the voting system. In this case, it seems that the malfunctioning BVAS played a significant role in allowing over-voting to take place. The implementation of BVAS revealed its flaws during the recently concluded 2023 elections. However, there is a glimmer of hope as several prominent politicians and influential figures suffered electoral defeats due to the adoption of BVAS. Iremeka (2023) suggests that despite the accomplishments attributed to the use of technology in the elections, some critics argue that the technologies, particularly BVAS, failed to deliver for the country.

Conclusion and Recommendations

The deployment of electoral technology in Nigeria has faced several challenges, as identified by various scholars. Weak internet and broadband connectivity have hindered the smooth functioning of electoral technology, limiting its effectiveness in facilitating elections. The logistical preparedness of electoral bodies has also been a concern, with inadequate planning and implementation affecting the successful deployment of technology. Furthermore, the weak cybersecurity infrastructure in Nigeria has left the electoral system vulnerable to hacking, raising concerns about the integrity and security of the electoral process. Lastly, a significant trust deficit in the electoral system, exacerbated by the co-option of election management bodies by the ruling political class, has hampered the acceptance and trust in electoral technology. These challenges highlight the need for comprehensive measures to address the issues surrounding the deployment of electoral technology in Nigeria. Based on the identified factors, the following recommendations can be made for further elections in Nigeria:

- **Strengthening Internet Infrastructure:** It is crucial to invest in improving internet and broadband connectivity across Nigeria. This includes expanding network coverage, enhancing network speeds, and ensuring reliable connectivity in remote areas. By addressing this infrastructure gap, the accessibility and effectiveness of electoral technology can be significantly enhanced.
- **Cost Considerations:** Measures should be taken to address the high cost of electoral technology. This may involve exploring partnerships with technology companies, negotiating favorable pricing, or seeking financial support from international organizations. Making the technology more affordable and accessible will contribute to its wider adoption and utilization in the electoral process.
- **Enhanced Logistic Planning:** Election management bodies must prioritize comprehensive logistic planning to ensure the smooth deployment of electoral technology. This involves conducting thorough assessments of infrastructure requirements, establishing contingency plans, and providing adequate training and technical support to election officials. Adequate preparedness will minimize disruptions and improve the efficiency of the electoral process.
- **Strengthen Cybersecurity Measures:** Robust cybersecurity measures must be implemented to protect the integrity and security of the electoral technology infrastructure. This includes regularly updating software and hardware systems, conducting vulnerability assessments, and establishing incident response protocols. Collaboration with cybersecurity experts and international organizations can provide valuable insights and support in this regard.
- **Rebuilding Trust:** Rebuilding trust in the electoral system is crucial for the successful adoption of electoral technology. Election management body (INEC) should prioritize transparency, independence, and accountability in their operations. Measures such as involving civil society organizations, international observers, and independent audits can help restore confidence in the electoral process. Additionally, efforts should be

made to depoliticize the appointment and composition of election management body to ensure their neutrality and impartiality in deploying the needed and availabletechnology.

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