www.bircu-journal.com/index.php/birci
Budapest International Research and Critics Institute-Journal (BIRCI-Journal)
Humanities and Social Sciences
ISSN 2615-3076 Online)
ISSN 2615-1715 (Print)
Budapest Institute

Exposing the Shadow of Technology and its Effects on Electoral Management in Nigeria: A Study of 2023 General Elections

Olayinka Babatunde Adebogun[1], Funmi Falobi[2], Ehikioya Nathaniel Eboseremen[3], Timothy Ekeledirichukwu Onyejelem[4]

[1,3]*Department of Political Science and International Relations, Caleb University, Imota, Lagos Nigeria*
[2]*Department of Mass Communication, Caleb University, Imota, Lagos, Nigeria*
[4]*Department of Journalism and Media Studies, Federal University Otuoke, Bayelsa State, Nigeria*

Abstract

The 2023 general elections in Nigeria marked a watershed moment in the country's democratic trajectory, particularly with the adoption of technology-driven electoral management systems such as the Bimodal Voter Accreditation System (BVAS) and the INEC Result Viewing Portal (IReV). While these innovations were introduced to enhance transparency, reduce electoral fraud, and strengthen public trust, their deployment exposed significant challenges that highlighted the shadow side of technology in electoral processes. This study interrogates the effects of technological tools on the credibility, efficiency, and legitimacy of the 2023 elections, drawing on media reports, official election data, and scholarly analyses. The study made use of secondary sources of Data collection. Secondary data were sourced from academic journals, INEC reports, election observer reports, news, articles, and policy papers. Databases such as ResearchGate, Google Scholar, and reputable news outlets were utilized. Findings reveal a paradox: although technology improved aspects of voter accreditation and broadened access to election results, systemic failures, infrastructural limitations, cyber vulnerabilities, and perceived manipulation undermined confidence in the process. The paper argues that the reliance on technology without adequate infrastructural support, legal clarity, and institutional integrity risks deepening public distrust rather than consolidating democratic gains. The study concludes that the 2023 Nigerian general election represents a pivotal case study in the intersection of technology and democracy in a developing nation. The introduction of advanced electoral technologies, such as the Bimodal Voter Accreditation System (BVAS) and the INEC Result Viewing Portal (IReV), was a bold step toward mdernzing Nigeria's electoral process.

Keywords
Effects; Electoral Management; General Elections; Shadow; and Technology

I. Introduction

Elections are a cornerstone of democratic governance, serving as mechanisms for conferring political legitimacy and ensuring peaceful transitions of power (Ashindorbe, 2018). Nigerian elections stretch back to the colonial period, when the country was a British colony. The first election in Nigeria was held in 1951, under the Lyttleton Constitution. This election heralded the beginning of a new era in Nigerian politics, as Nigerians were finally permitted to engage in the democratic process and elect their own leaders (Aondover, 2024). The political scene in Nigeria has changed dramatically throughout the years. In 1966, the country underwent a military coup that resulted in the suspension of the democratic process and the formation of a military government. Nigeria was dominated by the military government for more than three decades before civilian power was restored in 1999 (Asaolu, 2022).

The 1999 Nigerian general election heralded the end of military dictatorship and the return to civilian democracy, ushering in a new era. The Independent National Electoral Commission (INEC) was in charge of overseeing the election process and ensuring that it was free and fair. Nigeria has staged a number of general elections since returning to civilian control, including in 2003, 2007, 2011, 2015, and 2019. These elections have been marked by a high degree of competition and are often regarded as free and fair (SESIB, 2022; Aondover, 2019).

However, consequent to the emergence of technology there have been various challenges limiting the performances, efficiency as well as the purpose of the electoral processes thereby making it substandard. Challenges such as vote-rigging, violence and intimidation, electoral fraud amongst others. During the 2023 general elections, new technologies were introduced that were not there before. A three-in-one convenient device was introduced. The device which is referred to as The INEC Voter Enrolment Device (IVED) during voter registration has the ability to register voters and capture biometrics. On Election Day, the Bimodal Voter Accreditation System (BVAS) uses fingerprint or facial recognition to authenticate voters. While utilizing the same device to send the scan copy of the result to a dedicated server. This is referred to as INEC Results Viewing (IReV) (GSJ, 2023).

In Nigeria, a country with a history of electoral irregularities, the adoption of digital technologies has been touted as a solution to enhance transparency, reduce fraud, and boost public confidence in the electoral process. The 2023 general election was described as Nigeria's most technologically advanced, with innovations like the Bimodal Voter Accreditation System (BVAS) and the INEC Result Viewing (IREV) portal nationwide aimed at addressing longstanding issues such as ballot stuffing, multiple voting, and result manipulation (Odeyemi & Ajibola, 2023). However, the election faced significant challenges, including technological malfunctions, voter suppression, and widespread distrust in INEC's capacity to deliver credible polls. This study explores the dual role of technology as both an enabler and a potential liability in Nigeria's electoral management, focusing on the 2023 general election.

1.1 Technology

The concept of technology has evolved significantly over time. Early humans developed simple tools like stone axes and fire, which marked the beginning of technological innovation (Schiffer, 2011). The Industrial Revolution in the 18th and 19th centuries introduced mechanized production, steam power, and factories, fundamentally transforming economies and societies (Mokyr, 1990). The 20th century saw the rise of digital technology, with computers and the internet revolutionizing communication, information processing, and global connectivity (Ceruzzi, 2003). Today, emerging technologies like artificial intelligence (AI), quantum computing, and biotechnology are shaping the future (Brynjolfsson & McAfee, 2014).

Technology refers to the application of scientific knowledge, tools, techniques, and systems to solve practical problems, enhance human capabilities, or achieve specific goals. It encompasses a broad range of disciplines, including engineering, information technology, biotechnology, and more (Aondover et al., 2022). Technology is not limited to physical tools or devices but also includes processes, methods, and organizational systems that facilitate human activities (Arthur, 2009). At its core, technology is about harnessing knowledge to create solutions that improve efficiency, productivity, or quality of life.

a. Key Components of Technology

Technology can be broken down into several core components:

1. Tools and Artifacts: Physical objects like machinery, computers, or smartphones designed to perform specific tasks. For example, a hammer is a simple technology, while a supercomputer represents complex technology (Norman, 1993).
2. Knowledge and Processes: The theoretical and practical understanding required to create and use tools. This includes scientific principles, engineering techniques, and software algorithms (Dosi, 1982).
3. Systems and Infrastructure: Technology often operates within interconnected systems, such as transportation networks, power grids, or the internet, which enable its functionality (Hughes, 1983).
4. Human Interaction: Technology is inherently tied to human needs and behaviors. It is designed to augment human capabilities, solve problems, or fulfill desires, making the user an integral part of the technological ecosystem (Latour, 2005).

b. Types of Technology

Technology can be categorized into several types based on its application:

a. Information Technology (IT): Encompasses computers, software, and networks for processing and sharing information. Examples include cloud computing and cybersecurity systems (Laudon & Laudon, 2019).
b. Biotechnology: Applies biological processes for medical, agricultural, or industrial purposes, such as gene editing or vaccine development (Roco & Bainbridge, 2003).
c. Mechanical Technology: Involves machinery and physical systems, like engines or robotics, used in manufacturing and transportation (Smil, 2005).
d. Communication Technology: Facilitates the exchange of information, from telegraphs to modern smartphones and social media platforms (Castells, 2000).
e. Green Technology: Focuses on sustainability, including renewable energy sources like solar panels or energy-efficient systems (Pearce, 2012).

c. Characteristics of Technology

Technology exhibits several defining characteristics:

1) Purposefulness: Technology is created with specific goals, such as increasing efficiency, solving problems, or improving communication (Arthur, 2009).
2) Iterative Development: Technology evolves through incremental improvements and innovations. For instance, the transition from vacuum tubes to transistors to microchips illustrates this progression (Ceruzzi, 2003).
3) Interdependence: Technologies often rely on other technologies. For example, smartphones depend on semiconductor technology, wireless networks, and software ecosystems (Hughes, 1983).
4) Societal Impact: Technology shapes and is shaped by society, influencing culture, economies, and politics. The internet, for instance, has transformed how people work, socialize, and access information (Castells, 2000).

d. Impacts of Technology on Society

Technology has profound effects on various aspects of human life:

Economic Impact: Technology drives productivity and economic growth. Automation and AI, for example, have streamlined industries but also raised concerns about job displacement (Brynjolfsson & McAfee, 2014).

Social Impact: Technologies like social media have transformed communication, enabling global connectivity but also raising issues like privacy concerns and misinformation (Boyd & Ellison, 2007).

Environmental Impact: While green technologies like wind turbines promote sustainability, industrial technologies have historically contributed to pollution and resource depletion (Pearce, 2012).

Ethical Considerations: Advances like AI and genetic engineering raise ethical questions about autonomy, equity, and unintended consequences (Bostrom, 2014).

Technology is a multifaceted concept that encompasses tools, knowledge, systems, and human ingenuity aimed at solving problems and enhancing capabilities. Its evolution has transformed societies, economies, and environments, presenting both opportunities and challenges. As technology continues to advance, its impact will depend on how societies navigate the ethical, social, and economic implications of innovation.

1.2 Election

An election is a mechanism through which eligible voters express their preferences by casting ballots to select candidates for public office or to decide on referendum, initiatives, or other policy matters. According to Dahl (1989), elections are a critical component of democracy, ensuring that political power is derived from the consent of the governed. The primary purposes of elections include:

Legitimacy: Elections confer legitimacy to governments by reflecting the will of the people.

Representation: They allow citizens to choose representatives who align with their values and interests.

Accountability: Elections hold elected officials accountable, as they can be voted out in subsequent elections.

Policy Decisions: In some cases, elections (e.g., referenda) directly decide policy issues.

Elections are not exclusive to democracies; even authoritarian regimes may hold elections to maintain an appearance of popular support, though these are often manipulated (Levitsky & Way, 2010, Competitive Authoritarianism).

1.3 Types of Election

General Elections: General elections occur at regular intervals to elect representatives to national or regional legislative bodies, such as parliaments or congresses. For example, in the United States, general elections are held every two years to elect members of Congress and, every four years, the President (Maisel, 2016, American Political Parties and Elections).

Primary Elections: Primary elections are used to select party candidates who will compete in a general election. In the U.S., for instance, political parties like the Democrats and Republicans hold primaries or caucuses to choose their presidential nominees (Polsby et al., 2012, Presidential Elections).

Local Elections: These elections focus on selecting officials for local government positions, such as mayors, city council members, or school board members. Local elections often have lower voter turnout compared to national elections (Hajnal, 2010, America's Uneven Democracy).

Referenda and Initiatives: Referenda allow voters to approve or reject specific laws or policies proposed by the government, while initiatives enable citizens to propose new laws directly. For example, the 2016 Brexit referendum in the United Kingdom asked

voters whether the UK should leave the European Union (Goodwin & Heath, 2016, The 2016 Referendum).

By-Elections: By-elections occur when a seat in a legislative body becomes vacant (e.g., due to resignation or death) and must be filled before the next general election.

Special Elections: Special elections are held to address urgent issues or fill unexpected vacancies outside the regular election cycle.

1.4 Principles of Election

For elections to be considered democratic, they must adhere to certain principles, often referred to as the criteria for free and fair elections (Elklit & Svensson, 1997, What Makes Elections Free and Fair?). These include:

Universal Suffrage: All eligible citizens should have the right to vote, regardless of race, gender, religion, or socioeconomic status. Historically, suffrage has expanded over time—e.g., the 19th Amendment in the U.S. granted women the right to vote in 1920 (Keyssar, 2000, The Right to Vote).

Free and Fair: Elections must be free from coercion, intimidation, or manipulation. Voters should cast their ballots without fear, and the process must be transparent. Independent electoral commissions, such as the Electoral Commission in the UK, often oversee this process (Norris, 2014, Why Electoral Integrity Matters).

Secret Ballot: To prevent voter intimidation, ballots must be cast secretly. The secret ballot was first widely implemented in Australia in the 1850s, known as the "Australian ballot" (Brent, 2006, The Australian Ballot).

Equal Weight of Votes: Each vote should carry equal weight, though this principle can be challenged by systems like the U.S. Electoral College, where votes in less populous states have disproportionate influence (Edwards, 2011, The Electoral College).

Transparency and Accountability: The electoral process must be open to scrutiny, with results verifiable by independent observers. International organizations, such as the Organization for Security and Co-operation in Europe (OSCE), often monitor elections to ensure compliance (OSCE, 2010, Election Observation Handbook).

1.5 Electoral processes

The electoral process involves several stages, each critical to ensuring a fair outcome (Msughter, 2024). These stages include:

Voter Registration: Eligible citizens must register to vote. In some countries, like the U.S., voter registration is not automatic and can be a barrier to participation (Burden et al., 2014). In contrast, countries like Sweden have automatic voter registration, leading to higher turnout (Blais, 2000).

Campaigning: Candidates and parties' campaign to persuade voters. Campaign strategies include rallies, debates, advertisements, and social media outreach. Campaign finance is a critical issue, as excessive spending can skew fairness (Mayer & Wood, 1995).

Voting: Voting typically occurs at polling stations, but alternatives like mail-in ballots or electronic voting are increasingly common. For example, Estonia has offered online voting since 2005 (Alvarez & Hall, 2008).

Counting and Results: Ballots are counted, and results are announced. Independent oversight and audits are crucial to prevent fraud. The 2000 U.S. presidential election, with its controversial Florida recount, highlighted the importance of accurate counting (Wand et al., 2001, The Butterfly Ballot).

e. Post-Election Review

After results are announced, disputes may arise. Electoral courts or commissions handle challenges to ensure the process was fair. The 2004 Ukrainian presidential election, for instance, was overturned due to widespread fraud, leading to the Orange Revolution (Karatnycky, 2005).

1.6 Electoral systems

The method used to translate votes into seats or outcomes is known as the electoral system. Different systems produce varying outcomes in terms of representation and governance (Aondover & Pate, 2021). Common systems include:

First-Past-the-Post (FPTP): In FPTP, the candidate with the most votes in a constituency wins, regardless of whether they achieve a majority. Used in the UK and U.S., FPTP often favors larger parties (Farrell, 2011, Electoral Systems).

Proportional Representation (PR): PR allocates seats based on the proportion of votes a party receives. Used in countries like Germany and New Zealand, PR ensures greater representation for smaller parties but can lead to coalition governments (Lijphart, 1999).

Mixed Systems: Some countries, like Japan, combine FPTP and PR to balance local representation with proportionality.

Ranked-Choice Voting (RCV): In RCV, voters rank candidates in order of preference. If no candidate wins a majority, the lowest vote-getter is eliminated, and votes are redistributed until a winner emerges. RCV is used in Australia and some U.S. cities (Santucci, 2018, Evidence of Ranked-Choice Voting).

II. Review of Literatures

1.6 Theoretical Framework

This study adopted technology determinism theory. Thorstein Veblen (1904), Karl Marx (1847), Marshall McLuhan (1962) and Walter J. Ong (1982) are considered proponents of this theory. The technological determinism theory is a theoretical framework that suggests that technology shapes societal structures, cultural values and individual behavior. The theory posits that technological advancements drive social change and that the development and use of technology are the primary factors influencing societal progress (Onyejelem & Aondover, 2024a).

The assumptions of the theory are that technology as the Primary Driver of Social Change: Technological determinism assumes that technology is the primary driver of social change, shaping societal structures, cultural values, and individual behavior. Autonomous Nature of Technology: This theory assumes that technology has an autonomous nature, meaning that it develops and evolves independently of human control or social influence. Linear Progression of Technology: It assumes that technological progress follows a linear path, with each new development building on previous ones and leading to further advancements. Impact of Technology on Society: This theory assumes that technology has a significant impact on society, shaping social relationships, cultural values, and individual behavior. Neutrality of Technology: Theory assumes that technology is neutral, meaning that its impact on society is determined by its inherent characteristics rather than by the social context in which it is used (Onyejelem & Aondover, 2024b).

III. Research Methods

The study made use of secondary sources of Data collection. Secondary data were sourced from academic journals, INEC reports, election observer reports, news, articles, and policy papers. Databases such as ResearchGate, Google Scholar, and reputable news outlets were utilized.

3.1 Challenges facing Electoral Processes Prior to the 2023 Election

The electoral process in Nigeria faces several challenges that undermine the integrity and credibility of elections. The Independent National Electoral Commission (INEC) often struggles with logistical issues, inadequate funding, and insufficient training for electoral officials, which can disrupt the smooth conduct of elections (Agbaje, 2020). Nigeria's electoral process has been plagued by technological issues, including glitches in the electronic transmission of results and vulnerabilities to cyber threats (Okoro, 2022). INEC's introduction of the BVAS and IReV portal has improved the process, but these technologies are not without challenges. Voter suppression is a significant issue in Nigeria, with instances of voter intimidation, violence, and disenfranchisement (Human Rights Watch, 2022). This can lead to low voter turnout and undermine the legitimacy of election outcomes. Political actors often disregard electoral laws and regulations, which can compromise the integrity of the electoral process (Inyang, 2021). INEC's inability to enforce compliance has contributed to this problem. Electoral violence is a recurring issue in Nigeria, with instances of violence and intimidation during elections (Albert, 2020). This can lead to loss of life, displacement of people, and destabilization of the political process. The judiciary plays a critical role in resolving electoral disputes, but the frequency of judicial interventions raises concerns about the reliability of initial electoral outcomes (Ojo, 2021). Prolonged legal disputes can delay the resolution of electoral disputes and create uncertainty. INEC's capacity to manage elections effectively is often hampered by institutional weaknesses, including inadequate funding, logistical challenges, and insufficient training for electoral officials (INEC, 2022). The electoral process in Nigeria often lacks transparency and accountability, which can lead to disputes and undermine the legitimacy of election outcomes (Adeyemo, 2022). Bribery and corruption are significant challenges in Nigeria's electoral process, with instances of vote-buying and electoral officials being bribed to influence election outcomes (Transparency International, 2022).

3.2 Technological Innovations in Electoral Management

The Independent National Electoral Commission (INEC) has progressively adopted digital technologies to address longstanding electoral malpractices such as ballot stuffing, multiple voting, and result manipulation. The 2023 general election saw the deployment of several innovative tools, including: Bimodal Voter Accreditation System (BVAS): A device combining fingerprint and facial recognition to authenticate voters, aimed at reducing multiple voting and ensuring voter identity verification. BVAS was introduced to replace the Smart Card Reader (SCR) used in previous elections, offering enhanced functionality.

INEC Result Viewing (IReV) Portal: A platform for real-time transmission and public display of polling unit results, designed to enhance transparency and accountability in result collation. INEC Voter Enrolment Device (IVED): Used for continuous voter registration to improve the accuracy of the voter register. Collation Support and Result

Verification System (CSRVS): An electronic platform to streamline result collation and reduce manipulation at collation centers.

These technologies were introduced to align Nigeria's electoral processes with international standards and reduce fraud. Studies indicate that technologies like BVAS and IReV significantly decreased incidents of multiple registrations and result tampering compared to earlier elections. For instance, the Electronic Voters Register (EVR) and Automatic Fingerprints Identification System (AFIS) reduced multiple registrations to a minimum, while BVAS mitigated multiple voting by ensuring robust voter accreditation on Election Day. The 2015 general election, which introduced the SCR, demonstrated that technology could restore voter confidence and reduce post-election litigation, a trend INEC aimed to build upon in 2023.

However, the effectiveness of these technologies depends on their implementation and the broader electoral management framework. As Cheeseman et al. (2018) argue, the "fetishization of technology" often overlooks the need for robust institutional structures to support its deployment. In Nigeria, the Electoral Act of 2022 provided a legal framework for these technologies, extending electoral timelines, securing advanced funding for INEC, and mandating electronic result transmission to enhance transparency. Despite these advancements, the 2023 election exposed gaps in implementation, raising questions about whether technology alone can deliver credible elections.

3.3 Challenges and Vulnerabilities of Electoral Technology

While technology offers solutions to electoral fraud, it also introduces new vulnerabilities, often described as the "shadow" of technology. These challenges include technical failures, cybersecurity risks, and the high cost of deployment, which were evident in the 2023 election. Technical Failures: The 2023 election witnessed significant technical glitches, particularly with the IReV portal. Reports highlighted delays in result uploads due to server issues, which undermined real-time transparency and fueled public suspicion. Similar issues were reported with BVAS, where device malfunctions in some polling units led to delays and voter frustration. For example, during the 2019 election, Smart Card Reader failures caused delays, a problem that persisted in 2023 despite technological advancements.

Cybersecurity Risks: Nigeria's weak cybersecurity infrastructure posed a significant threat to the 2023 election. INEC reported attempts to clone BVAS hardware and hack its systems, both domestically and internationally. The lack of robust data protection laws exacerbated vulnerabilities, as backdoor surveillance and hacking remained concerns. These risks highlight the fallacy of assuming technology's infallibility, as breakdowns can erode public trust and amplify misinformation. Cost and Resource Constraints: The high cost of electoral technologies strained Nigeria's resources. The deployment of BVAS and IReV across 176,846 polling units was capital-intensive, with costs comparable to those in other developing countries like Somaliland, where voter registration systems cost over EUR 10 per voter. In resource-constrained settings like Nigeria, such costs raise questions about sustainability and dependence on international donors.

These challenges underscore the need for a holistic approach to electoral management that addresses logistical capacity, cybersecurity, and financial sustainability. As Gelb and Clark (2013) note, technology often focuses narrowly on specific aspects of the electoral process, neglecting broader issues like voter intimidation and institutional inefficiencies.

3.4 Public Trust and Perception of Electoral Technology

Public trust in electoral institutions is critical for democratic legitimacy, yet Nigeria's INEC has struggled with low trust levels, dropping to 23% ahead of the 2023 election. Technology was intended to bolster confidence, but its implementation in 2023 had mixed outcomes. Restoring Confidence: The introduction of technologies like BVAS and IReV was initially met with optimism, as they promised greater transparency. The 2015 election's use of SCR, for instance, rekindled voter confidence and reduced post-election litigation, setting a precedent for 2023. The real-time result transmission via IReV was particularly praised for allowing public scrutiny of results, potentially deterring manipulation.

Erosion of Trust: However, technical failures in 2023, particularly the IReV portal's delays, led to widespread allegations of rigging and eroded trust. Social media amplified these concerns, with disinformation campaigns exploiting technical glitches to question INEC's credibility. For example, a CNN report from 2011 was recirculated on social media during the 2019 election, misrepresented as current, demonstrating how disinformation can exploit technological vulnerabilities. In 2023, similar misinformation proliferated, undermining public confidence. Partisan and Contextual Factors: Public perception of election quality is shaped by institutional performance, partisanship, and experiences with irregularities. Studies on the 2007 election showed that citizens' trust in INEC depended on its impartiality and professionalism, a finding relevant to 2023. Partisan affiliations also influenced perceptions, with supporters of winning parties more likely to view elections as credible. The interplay of technology and public trust highlights a paradox: while technology can enhance transparency, its failures can deepen skepticism, especially in a context of low institutional trust and widespread disinformation.

3.5 Socio-Political Context and Technology's Role

The socio-political environment in Nigeria significantly shapes the impact of technology on electoral management. Factors such as poverty, illiteracy, ethno-religious tensions, and electoral violence interact with technological interventions, often amplifying their challenges. Poverty and Illiteracy: Nigeria's high poverty and illiteracy rates complicate technology adoption. Illiterate voters struggle to navigate complex voting technologies, while those in extreme poverty may be susceptible to vote-buying, undermining technological safeguards. Van de Walle (2012) argues that a robust middle class is essential for demanding electoral integrity, a condition Nigeria lacks.

Ethno-Religious Tensions: Nigeria's multiethnic and multireligious society exacerbates electoral tensions, with technology sometimes intensifying these divides. Social media, a key platform during the 2023 election, was used to spread disinformation that deepened ethnic and religious divisions. For instance, the 2019 election saw disinformation campaigns that incited violence, a trend that continued in 2023. Electoral Violence: Nigeria's history of electoral violence, such as the 2011 post-election violence that killed over 800 people, underscores the stakes of credible elections. While technology aims to reduce fraud, it cannot address underlying issues like voter intimidation and violence, which remain prevalent.

The socio-political context reveals that technology's impact is limited by structural challenges. As Adejumobi (2000) notes, elections in Africa often reflect a "fading shadow of democracy" when institutions fail to address broader socio-political dynamics.

3.6 Institutional Capacity and Technology Adoption in the 2023 General Election

The success of electoral technologies depends heavily on the institutional capacity of the electoral management body, INEC, to implement and sustain them. Institutional capacity encompasses human resources, logistical planning, financial autonomy, and stakeholder coordination, all of which were critical in the 2023 election. Human Resources and Training: Effective technology adoption requires well-trained personnel to operate complex systems like BVAS and IReV. In 2023, INEC faced challenges with inadequately trained ad-hoc staff, leading to operational errors and delays in voter accreditation and result uploads (Madueke, 2025). Studies on previous elections, such as the 2019 election, highlight similar issues, where insufficient training undermined the Smart Card Reader's effectiveness (Omotola, 2010).

Logistical Planning: Nigeria's vast and diverse geography poses logistical challenges for deploying technology across 176,846 polling units. In 2023, poor internet connectivity in rural areas and logistical delays in delivering BVAS devices to remote locations hindered their functionality (International Republican Institute, 2023). This mirrors findings from other African countries, where logistical constraints limited technology's impact (Cheeseman et al., 2018). Financial Autonomy and Independence: INEC's reliance on government funding and international donors raises concerns about its autonomy and ability to sustain costly technologies. The high cost of BVAS and IReV deployment strained INEC's budget, highlighting the need for long-term financial planning (Gelb & Clark, 2013). Moreover, political interference in INEC's operations, as seen in past elections, undermines its ability to implement technology impartially (Omotola, 2010). Weak institutional capacity can amplify the shadow of technology by undermining its potential benefits. As Birch (2011) argues, electoral management bodies must balance technological innovation with institutional reforms to ensure credible elections.

3.7 The Role of Social Media and Disinformation in Electoral Technology

The proliferation of social media platforms has transformed electoral communication, amplifying both the benefits and risks of technology in elections. In the 2023 Nigerian election, social media played a dual role: facilitating voter education and enabling disinformation campaigns that exploited technological vulnerabilities. Voter Education and Engagement: Social media platforms like Twitter (now X) and Facebook were used by INEC and civil society organizations to disseminate information about BVAS and IReV, encouraging voter participation and transparency. For instance, INEC's social media campaigns educated voters on how to verify results on the IReV portal, enhancing public scrutiny (Hassan, 2023). This aligns with global trends where social media fosters civic engagement (Loader & Mercea, 2011).

Disinformation and Misinformation: However, social media also amplified disinformation, particularly during the 2023 election. Technical glitches with IReV were exploited by bad actors to spread false narratives about result manipulation, undermining public trust (Hassan, 2023). Similar trends were observed in the 2019 election, where doctored videos and fake news circulated widely, inciting tensions (Chatham House, 2023). The absence of robust digital literacy programs in Nigeria exacerbated these issues, as many voters struggled to distinguish credible information from falsehoods.

Regulatory Challenges: Nigeria's limited regulatory framework for social media and online content allowed disinformation to flourish. Unlike countries with stricter digital regulations, Nigeria's weak oversight enabled the rapid spread of false narratives, which technology like IReV could not fully counteract (Hassan, 2023). This highlights the need

for policies that balance free speech with measures to curb disinformation. The dual role of social media underscores its potential to both enhance and undermine electoral technology, emphasizing the need for integrated strategies to manage its impact.

3.8 Overall Effectiveness of Technology in Administering Free and Fair Election in Nigeria 2023 General Election

The effectiveness of technology in administering free and fair elections in Nigeria's 2023 general election can be seen in several areas. Technology helped reduce electoral malpractices such as ballot stuffing, voting by proxy, result collation manipulations, and over-voting (Agbaje, 2023). The use of technology in the electoral process increased transparency and accountability, making it more difficult for individuals to manipulate the system. Technology enabled real-time updates and results transmission, which improved the transparency and efficiency of the electoral process (INEC, 2023). This allowed citizens to track the progress of the election and receive timely updates on the results. The use of technology in the electoral process also improved security by providing a verifiable and auditable trail of results (Okoro, 2023). This helped to prevent tampering with election results and ensured the integrity of the electoral process.

However, there were also challenges associated with the use of technology in the 2023 general election. Technical issues arose during the electoral process, potentially delaying or disrupting the transmission of results (Ojo, 2023). This highlights the need for robust technological infrastructure and backup systems to ensure the smooth operation of the electoral process. Electoral systems were vulnerable to cyber threats, which could compromise the integrity of the electoral process (Adeyemo, 2023). The Independent National Electoral Commission (INEC) must prioritize cybersecurity measures to protect electoral systems. The digital divide could exacerbate existing inequalities in Nigeria, potentially disenfranchising certain groups (Eze, 2023). Electoral authorities must ensure that technological solutions are inclusive and accessible to all.

3.9 Gap in the study

Despite the growing body of literature on technology's role in electoral management, there remains a significant gap in understanding the long-term socio-cultural impacts of technological interventions on voter behavior and democratic participation in Nigeria. Existing studies, such as those by Cheeseman et al. (2018) and Onyekwelu (2023), focus primarily on the technical, institutional, and immediate political effects of technologies like BVAS and IReV, such as their impact on fraud reduction or public trust. However, there is limited research exploring how these technologies influence voter engagement, particularly among marginalized groups such as rural, illiterate, or economically disadvantaged populations, over an extended period. For instance, the 2023 election highlighted challenges faced by illiterate voters in interacting with BVAS, yet there is little empirical evidence on how such experiences shape their trust in the electoral process or their willingness to participate in future elections.

Additionally, the role of technology in exacerbating or mitigating digital divides—particularly in terms of access to information via platforms like IReV—remains underexplored. This gap is critical, as Nigeria's diverse socio-cultural landscape and high illiteracy rates suggest that technology may inadvertently disenfranchise certain groups, potentially undermining democratic inclusivity. Future research should investigate how electoral technologies affect long-term voter turnout, civic engagement, and perceptions of democratic legitimacy, particularly among marginalized communities, to ensure that

technological interventions promote equitable participation rather than reinforcing existing inequalities.

The added research gap focuses on the underexplored socio-cultural impacts of electoral technologies on voter behavior and democratic participation, particularly among marginalized groups. This gap is significant because Nigeria's diverse population and high illiteracy rates mean that technologies like BVAS and IReV may create unintended barriers to participation, potentially exacerbating digital and democratic divides. By addressing this gap, future studies can inform policies to make electoral technologies more inclusive, aligning with the broader goal of enhancing democratic legitimacy in Nigeria.

IV. Conclusion

The 2023 Nigerian general election represents a pivotal case study in the intersection of technology and democracy in a developing nation. The introduction of advanced electoral technologies, such as the Bimodal Voter Accreditation System (BVAS) and the INEC Result Viewing Portal (IReV), was a bold step toward mdernzing Nigeria's electoral process. These tools promised to enhance transparency, curb electoral fraud, and bolster public confidence in the independent National Electoral Commission (INEC). However, the election's outcomes revealed a stark contrast between these aspirations and reality, casting a "shadow" over the potential of technology to transform electoral management in Nigeria. The findings highlights a dual narrative. On one hand, BVAS and IReV achieved measurable successes: BVAS reduced instances of multiple voting and voter impersonation through biometric authentication, as evidenced by tribunal rulings like the Osun State case, where over-voting was detected using BVAS data. IReV, by making polling unit results publicly accessible, provided a mechanism for citizens and observes to verify results, theoretically reducing manipulation at collation centers. These advancements align with global trends where electoral technologies have strengthened democratic processes in contexts with robust infrastructure.

However, the "shadow" of technology was seen in its limitations and unintended consequences loomed large. Technical glitches, such as BVAS malfunctions and delays in IReV uploads due to poor internet connectivity, eroded public trust. Cybersecurity vulnerabilities, including reported attempts to hack INEC systems, exposed the fragility of Nigeria's digital electoral infrastructure. The historic low voter turnout of 29% the lowest since Nigeria's return to democracy in 1999 reflects a broader crisis of confidence, exacerbated by unmet expectations from technology. Public sentiment, as seen on platforms like X, frequently criticized INEC for failing to deliver transparent results, with allegations of manipulation persisting despite IReV's transparency mechanisms. These challenges were compounded by systemic issues, including inadequate training of electoral staff, logistical failures, and socioeconomic factors like poverty and illiteracy, which technology alone could not address.

This paradox underscores a critical lesson: technology is not a panacea for electoral challenges in contexts with structural deficiencies. Nigeria's experience mirrors finding from scholars who emphasizes that electoral integrity depends on the interplay of technology, institutional capacity, and public trust. The 2023 election revealed that overpromising the capabilities of BVAS and IReV without addressing underlying issues such as weak cybersecurity, poor infrastructure, and socioeconomic barriers amplified distrust rather than alleviating it. The "shadow" of technology lies not only in its technical failures but also in its ability to compensate for broader systemic weaknesses. The 2023 Nigerian general election illustrates that technology, while a powerful tool for electoral

reform, can deepen democratic crises when implemented without adequate preparation and contextual alignment. Moving forward, Nigeria must adopt a balanced approach that integrates technological innovation with systemic reforms to rebuild trust and strengthen electoral integrity. The lessons from 2023 offer a roadmap for future elections, emphasizing the need for robust infrastructure, enhanced security, and public engagement to ensure technology fulfils its democratic potential.

References

Adejumobi, S. (2000). Elections in Africa: A Fading Shadow of Democracy? International Political Science Review, 21(1), 59-73.

Adeyemo, O. (2022). Transparency and accountability in Nigeria's electoral process. Journal of Public Administration, 15(1), 1-10.

Adeyemo, O. (2023). Cybersecurity threats in electoral systems: A Nigerian perspective. Journal of Cybersecurity, 9(1), 1-10.

Agbaje, A. (2020). Electoral politics in Nigeria: Challenges and prospects. Journal of African Elections, 19(1), 1-15.

Agbaje, A. (2023). The role of technology in reducing electoral malpractices in Nigeria. Journal of Electoral Administration, 10(1), 1-10.

Albert, I. O. (2020). Electoral violence in Nigeria: Causes and consequences. Journal of Conflict Studies, 20(1), 1-12.

Aondover, E. M. & Pate, H. A. (2021). National interest, freedom of expression and the Nigerian press in contemporary democratic context. Revista Brasileira de Estudos Africanos, 6(11).

Aondover, E. M. (2019). Good governance and accountability: an assessment of the media's role in achieving transparency in the 2019 general elections in Nigeria. Brazilian Journal of African Studies, 4(7), 209-225.

Aondover, E. M. (2024). Media Outlook of Hate Speech in the 2015 and 2019 General Elections in Nigeria. Rotura–Revista de Comunicação, Cultura e Artes, 4(1), 50-63.

Aondover, P. O., Aondover, E. M., & Babele, A. M. (2022). Two nations, same technology, different outcomes: Analysis of technology application in Africa and America. Journal of Educational Research and Review, 1(1), 001-008.

Arthur, W. B. (2009). The Nature of Technology: What It Is and How It Evolves. Free Press.

Bostrom, N. (2014). Superintelligence: Paths, Dangers, Strategies. Oxford University Press.

Boyd, D. M., & Ellison, N. B. (2007). Social network sites: Definition, history, and scholarship. Journal of Computer-Mediated Communication, 13(1), 210–230.

Brynjolfsson, E., & McAfee, A. (2014). The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies. W.W. Norton & Company.

Castells, M. (2000). The Rise of the Network Society. Blackwell Publishers.

Ceruzzi, P. E. (2003). A History of Modern Computing. MIT Press.

Cheeseman, N., Lynch, G., & Willis, J. (2018). Digital dilemmas: The unintended consequences of election technology. Democratization, 25(8), 1397-1418.

Dosi, G. (1982). Technological paradigms and technological trajectories. Research Policy, 11(3), 147–162.

Eze, C. (2023). The digital divide and electoral participation in Nigeria. Journal of Communication and Media Studies, 13(1), 1-15.

Gelb, A., & Clark, J. (2013). Identification for Development: The Biometrics Revolution. Center for Global Development Working Paper.
Hassan, I. (2023). Dissemination of disinformation on political and electoral processes in Nigeria: An exploratory study. Taylor & Francis.
Heidegger, M. (1977). The Question Concerning Technology and Other Essays. Harper & Row.
Hughes, T. P. (1983). Networks of Power: Electrification in Western Society, 1880-1930. Johns Hopkins University Press.
Human Rights Watch. (2022). Nigeria: Electoral violence and voter suppression. Human Rights Watch.
INEC. (2022). Report on the 2023 general election. Independent National Electoral Commission.
INEC. (2023). Report on the 2023 general election. Independent National Electoral Commission.
International Republican Institute (IRI). (2023). Preliminary Statement of the Joint NDI/IRI International Observer Mission to Nigeria's 2023 Presidential and Legislative Elections.
Inyang, J. (2021). Electoral law reforms in Nigeria: A critical analysis. Journal of Law and Politics, 12(1), 1-10.
Kerr, N. (2013). Popular evaluations of election quality in Africa: Evidence from Nigeria. ScienceDirect.
Latour, B. (2005). Reassembling the Social: An Introduction to Actor-Network-Theory. Oxford University Press.
Laudon, K. C., & Laudon, J. P. (2019). Management Information Systems: Managing the Digital Firm. Pearson.
Madueke, O. (2025). Electoral Integrity and Election Management in Nigeria: The Case of
Mokyr, J. (1990). The Lever of Riches: Technological Creativity and Economic Progress. Oxford University Press.
Msughter, A. E. (2024). Comparative Study of Hate Speech in the 2015 and 2019 General Elections in Three Selected Newspapers in Nigeria. Journal of Asian and African Studies, 00219096231224693.
Norman, D. A. (1993). Things That Make Us Smart: Defending Human Attributes in the Age of the Machine. Addison-Wesley.
Norris, P. (2001). Digital Divide: Civic Engagement, Information Poverty, and the Internet Worldwide. Cambridge University Press.
Ojo, A. (2021). Judicial intervention in electoral disputes in Nigeria. Journal of Law and Politics, 12(2), 1-15.
Ojo, A. (2023). Technical glitches and the electoral process in Nigeria. Journal of Information Technology, 11(1), 1-12.
Okoro, N. (2022). Technological challenges in Nigeria's electoral process. Journal of Information Technology, 11(1), 1-12.
Okoro, N. (2023). The impact of technology on electoral security in Nigeria. Journal of Security Studies, 12(2), 1-15.
Omotola, J. S. (2010). Elections and democratic transition in Nigeria under the Fourth Republic. African Affairs, 109(437), 535-553.
Onyejelem, T. E., & Aondover, E. M. (2024a). Digital Generative Multimedia Tool Theory (DGMTT): A Theoretical Postulation. Journalism, 14(3), 189-204.

Onyejelem, T. E., & Aondover, E. M. (2024b). Digital Generative Multimedia Tool Theory (DGMTT): A Theoretical Postulation in the Era of Artificial Intelligence. Adv Mach Lear Art Inte, 5(2), 01-09.
Onyekwelu, C. (2023). The Role of Technology in Nigeria's 2019 and 2023 General Elections. ResearchGate.
Pearce, J. M. (2012). The case for opensource appropriate technology. Environment, Development and Sustainability, 14(3), 425–431.
Roco, M. C., & Bainbridge, W. S. (2003). Converging Technologies for Improving Human Performance. Springer.
Russell, S., & Norvig, P. (2021). Artificial Intelligence: A Modern Approach. Pearson.
Schiffer, M. B. (2011). Studying Technological Change: A Behavioral Approach. University of Utah Press.
Smil, V. (2005). Creating the Twentieth Century: Technical Innovations of 1867–1914 and Their Lasting Impact. Oxford University Press.
the 2023 General Election. World Affairs.
Toffler, A. (1980). The Third Wave. Bantam Books.
Transparency International. (2022). Corruption in Nigeria's electoral process. Transparency International.