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Legal Perspectives on the Use of Emerging Technologies in Elections in Africa

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Abstract:

This paper investigates the reception, integration, and use of new technologies in preparing, conducting, and managing elections in Africa. Historically, elections have been manually conducted, but due to voters' distrust of the system and the quest for modernization and better ways of doing things, there is a frenzied adoption of new technologies in the electoral system. Although this is a welcome development, this paper calls for caution as the deployment of new technologies has elicited mixed reactions, recorded twists and turns, and presented even new challenges. These include another phase of trust deficit by the electorate; the prohibitive cost of acquiring new technologies, and the judicialization of elections, even in some of the advanced countries where new technologies are being used. A better understanding of the intersection between technology and voting is, thus, necessary and imperative to interrogate the circumstances and legal environment in which the emerging technologies are also being used in Africa, so as to understand why and how they have produced unintended consequences. This paper seeks to achieve this through the doctrinal method of legal research.

المنظور القانوني حول استخدام التقنيات المستجدة في الانتخابات في أفريقيا

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الملخص:

تبحث هذه الورقة عن استقبال وتكامل واستخدام التكنولوجيات الجديدة في إعداد وإجراء وإدارة الانتخابات في أفريقيا. وتاريخياً، كانت الانتخابات تُجرى حسياً مادياً، ولكن بسبب عدم ثقة الناخبين في النظام، والسعي إلى التحديث وإيجاد طرق أفضل للقيام بالأمر، هناك اعتماد محموم للتكنولوجيات الجديدة في النظام الانتخابي. وعلى الرغم من أن الجماهير رحبوا بهذا النوع من التطور، إلا أن هذه الورقة تدعو إلى الحذر إذ كان انتشار التقنيات الجديدة قد أثار ردود فعل متباينة، وسجل تقلبات ومنعطفات، وطرح تحديات جديدة. وتشمل هذه، مرحلة أخرى من فقدان ثقة الناخبين، والتكلفة الباهظة للحصول على التكنولوجيات الجديدة، والتقاضى العديد لشرعية الانتخابات، حتى في بعض البلدان المتقدمة التي يتم استخدام التكنولوجيات الجديدة فيها. وبالتالي فإن الفهم الأفضل للتقاطع بين التكنولوجيا والتصويت أمر ضروري وحتمي لاستجواب الظروف والبيئة القانونية التي تستخدم فيها أيضاً التكنولوجيات المستجدة في أفريقيا، لفهم تلك الأسباب التي أدت الأمر إلى عواقب غير مقصودة. وتسعى هذه الورقة لتحقيق كل ذلك من خلال المنهج الفقهي للبحث القانوني.

الكلمات المفتاحية: التكنولوجيات المستجدة، الانتخابات، الديمقراطية،

أفريقيا، التصويت الإلكتروني، نيبيا، كينيا، نيجيريا.

Introduction:

The place of technology in modern societies cannot be exhaustively explained. Technology is so vital that human civilizations have been captured and expressed along shifts in technology; from the age of flint tools to the era of space explorations and sophisticated computer networks. In contemporary times, technology has become essential in building relationships between the State and other actors in the polity. In Africa, as it is in the rest of the world, information and communications technologies have repositioned service delivery, promoted transparency, streamlined government activities, and changed the political dynamics of society.

E-voting is one aspect of the technological transformations of the 21st century. Compared to paper-based voting which involves only a modest investment in technology, electronic voting technologies (EVTs) require massive investments but offer the advantages of convenience and flexibility.⁽¹⁾ In some cases, however, the results have been less than satisfactory. Although technology has become decentralized globally with many countries making great strides in its production and assimilation. Others, especially in the third world have grappled with macroeconomic, infrastructure, and regulatory challenges.⁽²⁾

New technologies are both a source of wonder and apprehension. The consequences of the rapid proliferation of networks, sensors, artificial intelligence, and automation are still not fully known.⁽³⁾ Concerns about emerging technologies arise from their novel character, and their ability to

(1) Okediran, O. O., Omidiora, E. O., Olabiyisi, S. O., Ganiyu R. A., & Alo O. O., A Framework for Multifaceted Electronic Voting System, *International Journal of Applied Science and Technology*, 2011, 1 (4), 135-142.

(2) Klynveld, Peat, Marwick, and Goerdeler (KPMG), 'The Changing Landscape of Disruptive Technologies', 2018, p. 1. Available at <https://info.kpmg.us/news-perspectives/technology-innovation/emerging-technologies-and-impact-on-society.html> . Accessed on 23 September 2023.

(3) Nathaniel Allen, 'The Promises and Perils of Africa's Digital Revolution', 11th March, 2021, Available at <https://www.brookings.edu/articles/the-promises-and-perils-of-africas-digital-revolution/#:~:text=Across%20the%20African%20continent%2C%20the,%E2%80%9Csmart%20cities%E2%80%9D%20are%20proliferating.> Accessed on 23 September 2023.

disrupt traditional ways of doing things. Emerging technologies are those, such as blockchains, 3D printing, artificial intelligence, 5G, and biometrics, whose development and application areas are relentlessly expanding, and their technical and value potential is still largely unrealized.⁽¹⁾ In Africa, new technology is being deployed in various facets of life with mixed results in a complex and uncertain regulatory environment.

To say that there is a dramatic rise in the adoption of new technology across Africa's electoral landscape is to state the obvious. At first glance, this would appear to be consistent with Article 3 ⁽⁴⁾ of the African Charter on Democracy, Elections, and Governance, which encourages parties to hold regular, transparent free, and fair elections.⁽²⁾ Indeed, voting is an indispensable part of democracy and represents the primacy of the choice of the electorate.⁽³⁾ Through free and fair voting, the citizenry decides the type and quality of representation it wants. Namibia, the first African country to employ electronic voting technology, used it in its general elections of 2014.⁽⁴⁾ Embedded in the guarantees of Article 13 of the African Charter on Human and People's Rights, 1981, on participation in government through 'freely chosen representatives' is the expectation that the right to vote and the integrity of the vote cast, no matter the media, will be protected by law. Presently, about "twenty-seven African countries, including the Democratic Republic of Congo, the Gambia, Ghana, Nigeria, and Somalia, have adopted technologies in election management to prevent electoral fraud."⁽⁵⁾ Election technology in Kenya for example, covers three principal areas: voter registration, voter verification, and the transmission of results.⁽⁶⁾

(1) Sinan Kufeoglu, "Emerging Technologies". Available at https://www.researchgate.net/publication/361926605_Emerging_Technologies. ResearchGate. Accessed on 3rd October 2022.

(2) African Charter on Democracy, Elections and Governance, 2007.

(3) Reddy, A. V., & Raghavan, S., Architecture of Multi-Channel Multi-Database, 2009, India: Network Systems Laboratory, Department of Computer Science and Engineering.

(4) BBC News. Namibia Votes in Africa's First Election Poll. 28th November 2014. Available at <https://www.bbc.com/news/world-africa-30241377>. Accessed on 11th October 2023.

(5) Rose Mosero, "Technology and Data Protection Must Go Hand-IN-Hand", 8th August, 2022. Carnegie Endowment for International Peace. Available at <https://carnegieendowment.org/2022/08/08/in-kenya-s-2022-elections-technology-and-data-protection-must-go-hand-in-hand-pub-87647>. Accessed on 10th October 2023.

(6) Ibid.

In Nigeria, ‘the Electoral Act of 2022 gave the Independent National Electoral Commission (INEC) broad powers to deploy election technology. The Bimodal Voter Accreditation System (BVAS) and INEC’s Results Viewing Portal (IREV) have been heralded as guarantors of enhanced transparency and accessibility of election results and an end to electoral fraud. The BVAS is an electronic device designed to read Permanent Voter Cards (PVCs) and authenticate voters, then upload images of the results to the IREV, an online platform publishing results for the public.⁽¹⁾

In the first section of this paper, an attempt is made to briefly give a profound understanding of democracy in Africa, while the second section focuses on the concept and different typologies of E-voting. In section three, the effort is made to engage in a discourse on the process and justification for e-voting, while section four examines the e-voting practices in Africa with particular reference to the experiences in Namibia, Kenya, and Nigeria which recently concluded elections using some forms of e-voting systems. Challenges regarding the efficiency in the use of e-voting in Africa are the issues examined in section five, while the final segment of the paper explored the digital privacy issues and, the implications of collecting and handling of the voter’s personal data.

1- Democracy in Africa:

The adoption of e-voting technology is aimed at deepening and institutionalizing democracy or representative government, especially in the conduct of regular free, and fair elections. Yet, the clamour for democracy in Africa appears more like the search for a global legitimacy tag rather than the establishment of governments that are accountable to their citizens. Schmitter and Karl cautioned us about this trend many years ago when they

(1) Nnena Ifeanyi-Ajufo and Leena Koni Hoffmann, ‘Tech Alone Won’t Improve Trust in Nigeria’s Elections’ 23rd February, 2023. Available at <https://www.chathamhouse.org/2023/02/tech-alone-wont-improve-trust-nigerias-elections>. Accessed on 9th October 2023.

said “Politicians with a wide range of convictions and practices strove to appropriate the label and attach it to their actions.”⁽¹⁾ Likewise, the American think tank; the Council on Foreign Relations sounded a note of alarm when it said that ‘democracy is in trouble in Africa’ and that decades after the advocacy for multiparty democracy, ‘the continent still faces sham elections, restrictions of rights, and few improvements.’⁽²⁾ After decades of military hegemony in the countries that have established civil rule, street protests, litigations, and coup de tats have become predictable outcomes of post-election Africa. Since the wave of independence, from the late 1950s to the early 1960s, the continent has suffered from political upheavals due to local and external factors.⁽³⁾ The euphoria of Africa’s nascent self-rule and democratic experience was short-lived due to widespread military incursion in politics.

For decades, dictatorships led by military officers held sway. The first military coup in sub-Saharan Africa took place on 13th January 1963 with the assassination of President Sylvanus Olympio of Togo.⁽⁴⁾ Sixty years later, two successful coups would be staged in quick succession in Niger and Gabon.⁽⁵⁾ Out of at least 242 successful military coups that have occurred globally since 1950, Africa accounts for the largest number at 106.⁽⁶⁾

Compared to Western nations, the introduction of democracy to Africa is comparatively recent.⁽⁷⁾ To Schmitter and Karl, ‘modern political democracy is a system of governance in which rulers are held accountable for their actions

(1) Schmitter, Philippe C., and Terry Lynn Karl, «What Democracy is... and is not.» *Journal of Democracy*, 1991, Vol. 2. No. 3: 75-88.

(2) Michelle Gavin. “Democracy in Name Only for Africa”. Council on Foreign Relations, 15th August 2023. Available at <https://www.cfr.org/blog/democracy-name-only-africa>. Accessed on 19th October 2023.

(3) N.N. Elekwa and Okechukwu I. Eme, ‘Post Election Violence in Africa: A Comparative Case of Kenya and Zimbabwe’, *The Indian Journal of Political Science*, 2021, Vol. LXXII. No. 3. Pp. 833 – 844.

(4) M. Japhet, ‘Military Coups and Military Regimes in Africa’, *Scientia Militaria, South African Journal of Military Studies*, 1978, Vol. 8. No. 4. p. 1.

(5) Christopher Zambakari, ‘Military Coup in Niger: The Legacies of Colonialism and the U.S. War on Terror in West Africa’. *The Zambakari Advisory Africa Report* No 14, September, 2023, Available at SSRN: <https://ssrn.com/abstract=4546350> or <http://dx.doi.org/10.2139/ssrn.4546350>. Accessed on 20th October 2023.

(6) See Patrick J. McGowan, ‘African Military Coup d’e tat, 1956 -2001: Frequency, Trends and Distribution’, *Journal of Modern African Studies*, 2023, Pp. 339 – 370.

(7) Gylfason Thoryaldur, ‘Democracy in Africa’. *Africagrowth Agenda*, 2023, Vol. 10. No. 4. Pp. 6-11.

in the public realm by citizens, acting indirectly through the competition and cooperation of their elected representatives.⁽¹⁾ Although democracy is a fluid concept, some of its characteristics are universally accepted. These include competition from, and legitimacy of opposition, a strong political party system, the right to challenge incumbents, and the conduct of free and fair elections.⁽²⁾ Scholars who situate democracy within elections tend to emphasize its procedures and institutional aspects. Democracy has a strong basis only where voters are allowed to freely vote their choices on the ballot box. However, despite the geometric spread of democratization in Africa, fears have been expressed about the disharmony between the outcomes of elections and the true wishes of voters.⁽³⁾ In other words, many African countries have been able to conduct only questionable elections. For example, Gabon, Guinea, Zimbabwe, Nigeria, and Kenya, where the ruling parties or leaders, hold multiparty elections, have awfully manipulated and maintained power through a combination of patronage of supporters and repression of opponents.

As a result, incumbents can be removed from office only through coups or revolutions, mass protests like the Arab Spring (beginning from the early 2010s to 2012, in countries like Tunisia, Libya, Egypt, Yemen, Syria, and Bahrain), or the use of force by regional coalitions as was the case of the Gambia under the former President Yahya Jammeh in 2017.⁽⁴⁾ Research has shown that a significant proportion of coups in autocracies occur after elections and that

(1) Philippe C. Schmitter and Terry Lynn Karl, 'What is Democracy...and is not' *Journal of Democracy*, 1991, Vol.2.No.3, pp. 75 -88.

(2) Todd Landman, 'Developing Democracy: Concepts, Measures, and Empirical Relationships' Centre for Democratic Governance Department of Government University of Essex Wivenhoe Park Colchester, Essex CO4 3SQ United Kingdom. Background Paper prepared for the Ministry of Foreign Affairs, Sweden, 2007.

(3) Agbaje, A., & Adejumobi, S., 'Do Votes Count? The Travails of Electoral Politics in Nigeria. *Africa Development*, 2006, 31(3), 25-44.

(4) William Gumedé, 'How Lack of Democracy Fuels Coups in Africa'. 22nd September. Democracy Works Foundation. 2023, Available at <https://www.democracyworks.org.za/how-lack-of-democracy-fuels-coups-in-africa/>. Accessed on 14th October 2023. See also B.A Friedman, 'West Africa's Decisive Intervention: A Lesson in Strategy', 2023. Available at <https://thestrategybridge.org/the-bridge/2017/3/15/west-africas-decisive-intervention-a-lesson-in-strategy>. Accessed on 20th September 2023.

elections can reveal the vulnerabilities of autocratic regimes.⁽¹⁾ Unsurprisingly, digital technologies have been touted as the panacea for election crisis management on the continent. However, another twist is the frequent resort to the judiciary for the determination of election disputes, even after the use of e-voting. One thing e-voting has certainly failed to eliminate is post-election litigation before the continent's judiciaries. Gathi and Akinkugbe noted that 'rather than creating new political equilibria, judicialization in national courts often results in the hegemonic preservation of incumbents'.⁽²⁾

2- E-voting: Concept and Typologies

In the view of Susanne Caarls, e-voting is an election or referendum that involves the use of electronic means in at least the casting of the vote⁽³⁾ E-voting may be carried out through the Direct Recording Electronic System and the Internet Voting Systems. The Direct Recording Electronic System is used in polling stations while Internet Voting Systems allow voters to cast their votes from anywhere as long as they have devices with internet connections.⁽⁴⁾ In their own contribution, Dana Indra Sensuse et al have opined that e-voting describes "a system where a voter casts his or her ballot through an electronic system, rather than a paper ballot, or a mechanical machine to punch a paper ballot. They also remarked that once recorded, an electronic vote is stored digitally and transferred from each electronic voting machine to a counting system".⁽⁵⁾

(1) Wig, T., and Rød, E. G., "Cues to Coup Plotters: Elections as Coup Triggers in Dictatorships." *Journal of Conflict Resolution*, 2016, 60(5), 787-812.

(2) Gathii, James Thuo, and Olabisi D. Akinkugbe, «Judicialization of Election Disputes in Africa's International Courts.» *Law & Contemp. Probs.* 2021, 84: p. 181.

(3) Caarls, S., "E-voting Handbook: Key Steps in the Implementation of E-enabled Elections." Council of Europe, 2010, p.7.

(4) Ahmed Ben Ayed, 'A Conceptual Secure Block Chain-Based Electronic Voting System'. *International Journal of Network Security & Its Applications (IJNSA)*, 2017, Vol.9. No.3, p. 2.

(5) (26) Dana Indra Sensuse, Pandu Bintang Pratama and Riswanto Aris, 'Conceptual Model of E-Voting in Indonesia'.

International Conference on Information Management and Technology, 13th -14th August, 2020. P. 387.

In its Policy Paper of 2011, the International Institute for Democracy and Electoral Assistance (IDEA) identified four typologies of e-voting. These are:

Direct Recording Electronic (DRE) voting machines. DREs can come with or without a paper trail (VVPAT, or Voter-Verified Paper Audit Trail). VVPATs are intended to provide physical evidence of the votes cast.

Optical Mark Recognition (OMR) systems are based on scanners that can recognize the voters' choice on special machine-readable ballot papers. OMR systems can be either central count systems (where ballot papers are scanned and counted in special counting centres) or Precinct Count Optical Scanning (PCOS) systems (where scanning and counting happens in the polling station directly as voters feed their ballot paper into the voting machine).

Electronic Ballot Printers (EBPs) are devices similar to a DRE machine that produce a machine-readable paper or electronic token containing the voter's choice. This token is fed into a separate ballot scanner which does the automatic vote count.

Internet Voting Systems (IVS) where votes are transferred via the Internet to a central counting server. Votes can be cast either from public computers or from voting kiosks in polling stations or—more commonly—from any Internet-connected computer accessible to a voter.⁽¹⁾

However, the accuracy and reliability of e-voting systems are contingent upon the manufacturers, operators, periodic tests and reviews of programs, as well as checks and balances by election managers. The most reliable voting systems can be so expensive that the benefits of e-voting are overshadowed by costs.⁽²⁾

(1) International Institute for Democracy and Electoral Assistance (IDEA) 'Introducing Electronic Voting: Essential Considerations'. Policy Paper, December 2011. International IDEA Resources on Electoral Processes. International IDEA Publications Office SE -103 34 Stockholm Sweden. Available at <https://www.corteidh.or.cr/tablas/28047.pdf>. Accessed on 19th October 2023.

(2) Ace-The Electoral Knowledge Network. "A Brief Background of Electronic Voting and Vote Counting Systems". Available at https://aceproject.org/ace-en/topics/em/emia/emial1/mobile_browsing/onePag. Accessed on 19th October 2023.

3- E-voting: Processes and Justification

E-voting is often seen as a tool for making the electoral process more efficient. Well-implemented e-voting solutions can increase the security of the ballot, speed up the processing of results, and make voting easier. E-voting greatly reduces direct human control and influence and helps guarantee transparency in the electoral process. It also improves the identification of complicated ballot papers, increases convenience for voters, prevents fraud in polling stations and during the transmission and tabulation of results, and reduces costs for producing and distributing ballot papers. E-voting can reduce the incidence of vote-selling and prevent manipulation through direct control of voting times. The cost of e-voting may be very high, but it remains the better option for the election process in the modern day. However, a badly implemented or failed e-voting solution can lead to a loss of trust among the people.⁽¹⁾

To keep up to date with the technological revolution of the age, Africa's democracy has warmed up to the prospect of incorporating technologies into the voting process. As a preliminary point, voting refers to the action or process of indicating choice, opinion, or will on a question, such as the choosing of a candidate, by or as if by some recognized means, such as a ballot⁽²⁾ In orthodox voting systems, pebbles or paper are used.⁽³⁾ Some scholars have identified the problems associated with paper-based voting to include violence and intimidation of voters by political thugs, a high statistic of invalid, miscounted, or transferred votes, voting in hostile weather conditions, abstention from voting due to lengthy queues, and low turnout

(1) See <<https://www.eods.eu/library/IDEA.Introducing-Electronic-Voting-Essential-Considerations.pdf>>, accessed 29 September 2024.

(2) "Voting". Collins English Dictionary. Available at <https://www.collinsdictionary.com/dictionary/english/voting>. Accessed on 18th October 2023.

(3) Carback III, R. T., Engineering Practical End-to-End Verifiable Voting Systems, Baltimore County: University of Maryland, 2010.

of voters.⁽¹⁾ However, this characterization also fits some recently concluded e-elections across Africa. Past election cycles and the 2023 general elections in Nigeria involving the use of electronic voting were marred by partisan violence, killings, arson, and voter intimidation.⁽²⁾

This also highlights the view that a nuanced approach is required for the assimilation of election technology. From the experiences of some other countries, a cautionary tale can be discerned, as experiences vary from one country to the other. After several years of use, the Netherlands for example, discarded e-voting and reverted to paper-based voting. The reason for this reveals the vulnerability of e-voting platforms; the report showed how the system worked, what software they had created for it, and gave details on how one could get complete and undetected control of the election results if one had access to the devices before the elections, even for a brief period.⁽³⁾

Evidence from Germany supports the view that digital transparency and opportunities for public scrutiny of electoral processes even by those lacking specialist knowledge are crucial for the legitimacy and acceptability of e-voting platforms. After using electronic voting technology from 1998 to 2005, e-voting was eliminated in Germany following the German Constitutional Court ruling on the constitutionality of electronic voting which held that ‘elections are required to be public in nature and that all essential steps of an election are subject to the possibility of public scrutiny unless other constitutional interests justify an exception . . . The use of voting machines which electronically record the voters’ votes and electronically

(1) Kogeda, O. P., & Mpekoa, N., “Model for a mobile phone voting system for South Africa”. Conference: Proceedings of 15th Annual Conference on World Wide Web Applications (ZAWWW 2013), Cape Town, South Africa: Cape Peninsula University of Technology.

(2) Anietie Ewang, ‘Nigeria’s Elections Remain Risky for Many Citizens: Authorities Need to Effectively Protect Polling Locations’. Human Rights Watch. 27th February, 2023. Available at <https://www.hrw.org/news/2023/02/27/nigerias-elections-remain-risky-many-citizens> accessed on 18th October 2023.

(3) European Digital Rights (EDRi). Electronic Voting Machines Eliminated in the Netherlands. 24th October, 2007. Available at <https://edri.org/our-work/edri-gram-number5-20e-voting-machines-netherlands/> . Accessed on 19th October, 2023.

ascertain the election result only meets the constitutional requirements if the essential steps of the voting and of the ascertainment of the result can be examined reliably and without any specialist knowledge of the subject . . . The very wide-reaching effect of possible errors of the voting machines or of deliberate electoral fraud makes special precautions necessary in order to safeguard the principle of the public nature of elections.⁽¹⁾ The court clarified that its decision did not circumscribe the power of the legislature. As a result, the legislature is not prevented from using electronic voting machines in elections if the possibility of a reliable examination of correctness, which is constitutionally prescribed, is safeguarded. A complementary examination by the voter or by the electoral bodies or the general public is possible for example with electronic voting machines in which the votes are recorded in another way besides electronic storage.”⁽²⁾

4- E-Voting Practice in Africa: Reference to Practices in Selected Countries

In this section, we shall carry out a quick review of the e-voting practices in Africa with particular reference to the experiences in Namibia, Kenya, and Nigeria which have recently concluded elections using some forms of e-voting.

Over the last three decades, there have been significant efforts to improve election delivery and build trust in electoral processes. Electoral integrity is a recognized priority for citizens and stakeholders seeking genuine political competition and accountability. Polls undermined by malpractice or poor management also regularly result in conflict. Between 1990 and 2014 incidents of violence or intimidation marred more than half of sub-Saharan elections, with Ivory Coast, the Democratic Republic of Congo, Kenya, Nigeria, Sudan, and Togo routinely experiencing pre-electoral and post-electoral violence.⁽³⁾

(1) National Democratic Institute (NDI), ‘The Constitutionality of Electronic Voting in Germany’. Available at <https://www.ndi.org/e-voting-guide/examples/constitutionality-of-electronic-voting-germany>. Accessed on 19th October 2023.

(2) Ibid.

(3) Institute for Security Studies, <https://issafrica.org/iss-today/five-worrying-signs-of-africa-s-poor-election-quality>, accessed 29 September, 2024.

However, despite decades of democracy, many countries in Africa still struggle to have free, fair, and transparent polls. Five⁽¹⁾ concerning trends undermine the integrity of Africa's electoral processes and the quality of elections. First is the lack of trust among political parties and voters in election management bodies. Second, polls in Africa are undermined by weak transparency surrounding electoral processes, such as in Ghana, Nigeria, Kenya, and Zimbabwe. Concerns are often sparked by allegations of abuse of power by those in office and accusations of electoral commission bias against opposition parties. A third concern is the high cost of elections in Africa, which undermines the integrity of elections. The average price of elections in Africa is said to be higher than in Europe, North America, and Australia. This is coupled with expensive election filing fees, excessive campaign budgets, and funds used in buying illicit votes. The fourth factor is fierce presidential and legislative campaigns that increase the threat of electoral violence. The rise of militant and armed vigilantes associated with political parties has become a significant disruption to free and fair voting and the integrity of election outcomes. These armed groups are often used to intimidate voters and suppress their choices, especially in opponents' strongholds. In some cases, ruling parties use the state security service to intimidate voters, as witnessed in the 2023 elections in Nigeria, Zimbabwe, and Madagascar, among others. Lastly, using misinformation and disinformation to undermine elections is a growing global trend, exacerbated by fake news. Countries like Nigeria and South Africa are no exception to such ugly incidents during their elections.⁽²⁾

Namibia

Namibia became the first country in Africa to use electronic voting

(1) See <<https://www.tandfonline.com/doi/full/10.1080/10220461.2023.2274852#d1e189>>, accessed 29 September 2024.

(2) Ibid.

machines (EVMs)⁽¹⁾ in national elections in 2014.⁽²⁾ This election also used two additional technologies that have been used in other African elections: the Biometric Voter Registration Kit (BVRK) for voter registration and the Voter Registration Kit (VVD) to help identify voters during voting. In 2014, Hage Geingob won an overwhelming 87% of the vote, while runner-up McHenry Venaani won less than 5%.⁽³⁾

E-voting was also used in the Namibia Presidential and National Assembly Elections which took place on the 27th of November 2019. It was the sixth multiparty elections since Namibia's independence, and the most competitive in the country's electoral history. The electoral competition was heightened by the candidacy of a card-carrying member of the governing South West African People's Organisation (SWAPO); Panduleni Itula, who, as an independent candidate, decided to challenge the party's agreed candidate, incumbent President Hage Geingob, in the Presidential election. The dynamics of this phenomenon within SWAPO and voting patterns prompted some stakeholders to express concerns over an increasing perception that tribalism could be entrenched in Namibian politics. Stakeholders the Group met with believed that the rivalry could have been motivated by tribalism, as President Hage Geingob is from the minority Damara tribe, while Itula is from the majority Ovambo tribe which had previously led SWAPO. The participation of an independent candidate and the candidacy of a woman, NUDO's (National Unity Democratic Organisation) Esther Muinjangu, for the Presidential election, were unprecedented developments in the country's electoral history.⁽⁴⁾

(1) Ndjodi Ndeunyema, Challenge to Electronic Voting Machines in Namibia's Elections Dismissed by the Electoral Tribunal, Nov 27, 2019, <<https://ohrh.law.ox.ac.uk/challenge-to-electronic-voting-machines-in-namibias-elections-dismissed-by-the-electoral-tribunal/>>, 29 September 2024.

(2) Ibid.

(3) Reports of the Commonwealth Observer Group on Namibia Presidential and National Assembly Elections 27 November 2019, <https://production-new-commonwealth-files.s3.eu-west-2.amazonaws.com/s3fs-public/documents/NAMIBIA%20COG%20REPORT%202019%20FINAL.pdf?VersionId=VcME11SrOnim_m.V5s-8Qu8Iltxm50hQm>, accessed 30 September 2024.

(4) Ibid.

The lack of a Voter Verifiable Paper Audit Trail (VVPAT) was also a source of concern for several stakeholders during the 2019 election in Namibia. The loss of some Electronic Voting Machines (EVMs) loaned by the Electoral Commission of Namibia (ECN) to the SWAPO party for its internal elections, as well as minimal communication and engagement over the issue, further eroded confidence and trust in the machines. On 25 November, two days before voting day, the Electoral Tribunal dismissed an application by the independent presidential candidate to replace electronic voting machines with ballot papers. The Tribunal, however, ruled that it had no jurisdiction over the matter.⁽¹⁾ At the end of the voting exercise, the incumbent President Hage Geingob was reelected with 56.3% of the vote.⁽²⁾ Despite the competitive nature of the elections, the Commonwealth Observer Group echoed that the electoral environment was largely peaceful, transparent, and well-managed.⁽³⁾

Kenya

Kenya introduced e-voting in 2013, but the last general elections to elect the president, senators, county governors, members of the National Assembly, and members of county assemblies were conducted on 9th August 2022. The Independent Electoral and Boundaries Commission of Kenya (IEBC) decided to digitally publish handwritten result forms from over 46,000 polling stations, allowing any Kenyan with an Internet connection to tabulate results. Kenya did not use electronic voting machines but rather used ballot papers and maintained digital transparency.⁽⁴⁾ Raila Odinga, who was defeated in the presidential election filed a petition at the Supreme Court of Kenya challenging the results. He alleged voter fraud, and cited evidence ranging from a suspicious laptop and allegedly falsified ballot papers that

(1) Paulo Sambo. The Applicability of Internet Voting in Africa. 03 December 2021. <<https://www.intechopen.com/chapters/77251>>, accessed 29 September 2024.

(2) Joseph Siegle, An Overview of Africa's 2019 Elections, January 31, 2019. <<https://africacenter.org/spotlight/an-overview-of-africas-2019-elections/>>, 29 September 2024.

(3) Ibid.

(4) German Institute for Global and Area Studies (GIGA), 'Paper Ballots With Digital Transparency: Kenya's Pioneering Election', No. 7. 2022. Available at <https://www.giga-hamburg.de/en/publications/giga-focus/paper-ballots-with-digital-transparency-kenya-s-pioneering-election> . Accessed on 20th October 2023.

led to the arrest of foreign nationals with access to the election's digital infrastructure.⁽¹⁾ The process for voting in Kenya was elaborately described by Kamotho Walganjo⁽²⁾ when he says that: "at the end of the voting period, the ballots are manually counted in the polling room in which the voting took place. They are announced publicly and physically entered into the respective Form 34As, depending on the election. For example, Forms 34As are for the presidential elections. These forms are signed by all the available agents. The electronic transmission system comes in after this step where the signed Form 34As is electronically transmitted to the IEBC. Once the results are transmitted electronically to the IEBC, they are downloaded to a portal that is available to all. Meanwhile, the results announced at the numerous polling rooms and contained in the Form 34As are delivered to the constituency tally centre where they are then added up. This tallying process is entirely manual. At each of these constituency tally centers, the results are also publicly announced. What then happens to the presidential results is that the Form 34B, an aggregation of all presidential results in a constituency, and the Form 34As from which the 34B was prepared, are physically transported to the national tally centre in Nairobi."⁽³⁾

Nigeria

E-voting technology was used in the general elections conducted on 25th February 2023. The Independent National Electoral Commission (INEC) used the Bimodal Voter Accreditation System (BVAS). At a polling station, a voter is required to present a Permanent Voter Card (PVC) which would be verified by BVAS using his or her biometrics. This would comply with

(1) Adam Teufel, Courts in Transition: Kenya's Contested Presidential Election. 24th August, 2022. European Council on Foreign Relations. Available at <https://ecfr.eu/article/court-in-transition-kenyas-contested-presidential-election/>. Accessed on 20th October 2023.

(2) Kamotho Walganjo. 'The Electronic System Has Added No Value to Our Elections, Discard It'. The Standard. Available at <https://www.standardmedia.co.ke/kamotho-waiganjo/article/2001470939/the-electronic-system-has-added-no-value-to-our-elections-discard-it>. Accessed on 20th October, 2023.

(3) Ibid.

Regulation 18 of the Regulations and Guidelines for the Conduct of Elections 2022, which provides that in accordance with Section 47 ⁽²⁾ of the Electoral Act 2022, a person intending to vote shall be verified to be the same person on the Register of Voters by the use of the Bimodal Voter Accreditation System (BVAS) or any other device approved by the Commission, in the manner prescribed in these Regulations and Guidelines.

Further checks are made to confirm that the voter's data are the same as stored in the Voters' Register. After the voter's accreditation, he or she is directed to the voting cubicle to mark his or her choice on the ballot paper. At the close of voting, the presiding officer counts the votes in the presence of the agents of the political parties and requests them to countersign the results. On the completion of all polling unit voting and results processes, it is compulsory under Regulation 38 for the presiding officer to:

Electronically transmit or transfer the result of the Polling Unit direct to the collation system as prescribed by the Commission; and, Use the BVAS to upload a scanned copy of the EC8A to the INEC Result Viewing Portal (IREV), as prescribed by the Commission.

Both the use of the BVAS and the entire general elections were riddled with controversies. The European Union Election Observation Mission Nigeria 2023 stated that obstruction and organized violence limited the free expression of the will of the voters, despite efforts by civil society to promote democratic standards.⁽¹⁾ The two leading opposition candidates, Atiku Abubakar and Peter Obi, alleging irregularities,⁽²⁾ filed petitions to cancel the results of the elections at the Presidential Election Petition Court (PEPC). Although, the PEPC affirmed the results of the elections. Messrs. Atiku and

(1) European Union Election Observation Mission Nigeria 2023. Second Preliminary Statement, Abuja, 20 March 2023. Governorship and State House of Assembly elections 18 March, 2023

(2) Camillus Eboh, 'Nigeria's Obi, Atiku Challenge Presidential Election Results'. Reuters. 22nd March 2023. Available at <https://www.reuters.com/world/africa/nigerias-obi-petitions-court-over-presidential-election-result-2023-03-21/>. Accessed on 20th October 2023.

Obi appealed to the Supreme Court, but the Court also upheld the election of Mr. Tinubu as President.⁽¹⁾

5- Challenges Associated with E-Voting Technologies in Africa:

E-voting consists of a large complex system, which makes it difficult to monitor the entire network, and this poses a serious threat to the smooth conduct of election through the application of e-voting. The monitoring of the network is very expensive, and there is no hundred percent guarantee that the network will be secure. Hackers could use malware to rig the outcome of the elections, by tampering with the way votes are submitted and counted, or even casting votes for people who did not vote. E-voting may be a source of conflict between political parties if one party considers that e-voting might be beneficial to the other party/parties.⁽²⁾ Some of the fears and challenges affecting the efficiency of e-voting in African electoral systems are voting management devices, lack of awareness among the eligible voters, poor internet connection and accessibility, and government practices in shutting down the internet⁽³⁾:

Voting Management Devices: A credible e-voting system must undergo security verification, testing, and continuous maintenance of the equipment to minimize malfunctioning risks during the voting period. Any breakdown before or during an election and failure to have the systems restored in time can leave many voters disenfranchised. The provision of redundant systems and the logistics of delivering them increases unplanned costs. Therefore, the success of e-voting depends on the design, development, and testing of the voting management devices to ensure that they are well-functioning. At the

(1) See Petition No: CA/PEPC/03/2023. See also Dennis Erezi, 'Supreme Court Affirms Tinubu's Election, Dismisses Appeal by Atiku, Peter Obi'. The Guardian. 26th October 2023. Available at <https://guardian.ng/news/supreme-court-affirm-tinubus-election-dismisses-appeal-by-atiku-peter-obi/>. Accessed on 28th November, 2023.

(2) Paulo Sambo. The Applicability of Internet Voting in Africa. 03 December 2021, < <https://www.intechopen.com/chapters/77251>>, accessed 29 September 2024.

(3) Ibid.

same time, the managers and administrators of the voting devices must receive adequate practical training, and the systems must be handled by people who have the required managerial, knowledge, skills, and ethical values to uphold the integrity of the election exercise. In countries like Nigeria, Kenya, and Malawi that adopted e-voting in their national elections, the exercise has been disappointing, as there are claims and counterclaims on system malfunctions or breakdowns or failures, such as the fake transmission of election results, the crash of the central computer server, and the crash of the electronic counting machines, which mostly led to a lot of confusion in the outcome of the election results.⁽¹⁾

Lack of awareness among the voters: Voting education is important for creating, maintaining, and raising the awareness of the voters, especially during the transition to a new system. Most importantly, voters need to know how to vote legally and actively participate in voting. Voters should receive general training on the use of voting equipment, its functions, features, how to prevent fraud or cheating, etc. Voting educators are responsible for educating voters about their rights and the consequences of voting.⁽²⁾

Poor Internet connection and accessibility: Up till now, some African countries do not have full Internet access coverage. Countries like Somalia, South Sudan, and Sudan have often been affected by ravaging wars that have destroyed some of their infrastructure, thereby making it practically impossible for them to embrace the e-voting system during the elections. Countries like Kenya, Libya, Mauritius, Nigeria, Morocco, Seychelles, and Tunisia, which were considered to have higher national Internet reception, do not even have internet capacity that covers the whole country, especially the

(1) Joseph Kasumba Ssewanyana, Democracy and Electronic voting in Uganda: Opportunities and Challenges, Makerere University Business School, <<https://www.researchgate.net/publication/304793274>>, accessed 29 September 2024.

(2) Ndjodi Ndeunyema, Challenge to Electronic Voting Machines in Namibia's Elections Dismissed by the Electoral Tribunal, Nov 27, 2019, <<https://ohrh.law.ox.ac.uk/challenge-to-electronic-voting-machines-in-namibias-elections-dismissed-by-the-electoral-tribunal/>>, 29 September 2024.

rural areas where the majority of the population resides. It will, therefore, be difficult to conduct e-voting elections in these rural areas where the majority of the population lives.⁽¹⁾

Government practices in shutting down the Internet during the elections: Some African governments do shut down the Internet during the period of elections, citing external interference or national security or curbing the spread of fake news during elections as some of their reasons. This was recorded during the elections in countries like Uganda, Libya, Malawi, and Sudan Presidential elections. Thus, this kind of action makes it difficult for voters to cast their votes through the provided e-voting systems.⁽²⁾

6- Digital Privacy:

In e-voting, the election cycle depends entirely on data. From the compilation of voter registers, and authentication of voter identities to the transmission of voting choices, vulnerabilities lurk around cyberspace. Yet, the privacy implications of e-voting do not appear to have received robust scholarly attention in Africa. Shui Yu has opined that privacy protection has become one of the biggest problems with the progress of big data.⁽³⁾ Voter information may be acquired and updated by government electoral agencies, from a variety of sources, such as:

- national population records, as done in Botswana;
- registration by voters at registration offices as demonstrated in Botswana, Namibia, Burkina Faso, Lesotho, and Nigeria; and,
- door-to-door registration, as conducted in South Africa for example.⁽⁴⁾

(1) Paulo Sambo, Op.Cit.

(2) Ibid.

(3) Yu, S., "Big privacy: Challenges and Opportunities of Privacy Study in the Age of Big Data". 2016. IEEE Access, 4, 2751-2763.

(4) Voter Registration: Basic Elements of Voter Registration. Available at <https://www.un.org/womenwatch/osagi/wps/publication/Chapter4.htm>. Accessed on 19th October 2023.

Up-to-date voter records enable election managers to plan and coordinate elections so that eligible voters are not disenfranchised. The problem of privacy has succinctly been that through the amassing and processing of vast amounts of data, individuals are profiled based on their stated or inferred political views, preferences, and characteristics. These profiles are then used to target individuals with news, disinformation, political messages, and many other forms of content aimed at influencing and potentially manipulating their views. This campaign environment presents novel challenges due to the scale and range of data available together with the multiplicity, complexity and speed of profiling and targeting techniques, all of which is characterized by its opacity. Existing legal frameworks designed to curtail this exploitation often also fall short, either in substance or enforcement.⁽¹⁾ Besides confirming the eligibility statuses of voters, voter information enables election management bodies to plan ahead for the polls. Voter data may be shared with other government institutions, statistical bureaus, research institutes, consultants, and even watchdogs. The preamble to the South African Protection of Personal Information Act 2013 recognizes that the right to privacy includes a right to protection against unlawful collection, retention, dissemination, and use of personal information. Concerted efforts are required to protect the privacy of votes and voters. However, Ira Rubinstein pointed out that legal complications may arise on the need to maintain equilibrium between the right of access to information in the custody of public bodies and the right to protect the personal data of voters.⁽²⁾ Therefore, the legal frameworks must be constantly updated for the purpose of protection of data. Laws should provide for redress and sanctions for data violations. Although, more African countries have enacted data protection laws, Ademuyiwa and Adeniran have pointed out that they are still not as comprehensive as the General Data

(1) Data and Elections. Available at <https://privacyinternational.org/learn/data-and-elections>. Accessed on 19th October 2023.

(2) Ira S. Rubinstein, Voter Privacy in the Age of Big Data, 2014. Wisconsin Law Review: 861.

Protection Regulations of Europe.⁽¹⁾ The writers are further of the views that: “many of these laws, except for the recently enacted laws in Benin, Kenya and Mauritius are not as comprehensive as that of the GDPR, and they often exclude the right to data portability and key accountability measures such as documentation of data-processing requirements”.⁽²⁾

The documentation provision is essential for monitoring the activities of data controllers and processors, especially when processing poses a high risk to the data subject’s rights and freedom. In this case, the GDPR further requires an impact assessment report from the data controller, which only the laws in Kenya and Mauritius mandate. Moreover, unlike the GDPR, most data protection laws in African countries do not require the designation of an in-house data protection officer by data controllers.”⁽³⁾

Conclusion

In an age of phenomenal technological innovations, divergent democratic practices, failed elections, and emerging technologies offer lots of promises and transformations. They show us new and better ways of doing things, as they make voting more efficient and trustworthy. Nevertheless, if poorly used, technological changes can test the limits of democracy, as e-voting can produce exactly the opposite results. This kind of a situation depicts the experiences of African countries that embraced e-voting opportunities but are still burdened with controversial elections. This paper examined several issues arising from the application of new technologies to the management of elections in Africa with particular reference to the Namibian, Kenyan, and Nigerian experiences; the two countries that recently concluded their

(1) Idris Ademuyiwa and Adedeji Adeniran, ‘Assessing Data Protection and Privacy in Africa’, Centre for International Governance Innovation (CIGI), 2020. Paper No. 244. See also Regulation (EU) 2016/679 of the European Parliament and of the Council of 27th April, 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation).

(2) Ibid.

(3) Ibid., pp.4-5.

elections through the systems of e-voting. In the course of our analysis, it is discovered that one thing e-voting has certainly failed to eliminate is post-election litigations before the continent's judiciaries, which often result in the hegemonic preservation of incumbents. In our discussion on digital privacy, we deliberately skirted subjects that require specialist scientific knowledge, like the application of blockchain to fortify digital systems from external vulnerabilities. It is, therefore, the view of the writers that infrastructural development and regulatory changes have to be made to e-voting platforms to make them more effective and reliable.

References:

- Ace-The Electoral Knowledge Network, A Brief Background of Electronic Voting and Vote Counting Systems,
- https://aceproject.org/ace/en/topics/em/emia/emia11/mobile_browsing/onePag.
- Adam Teufel, Courts in Transition: Kenya's Contested Presidential Election, European Council on Foreign Relations, <https://ecfr.eu/article/court-in-transition-kenyas-contested-presidential-election/> , 2022.
- African Charter on Democracy, Elections and Governance, 30th January 2007.
- Agbaje A., and Adejumobi, S, Do Votes Count?: The Travails of Electoral Politics in Nigeria. *Africa Development*, 31(3), 25-44, 2006.
- Ahmed Ben Ayed, A Conceptual Secure Block Chain-Based Electronic Voting System, *International Journal of Network Security and its Applications (IJNSA)* Vol.9. No.3, p. 2, 2017.
- Anietie Ewang, Nigeria's Elections Remain Risky for Many Citizens: Authorities Need to Effectively Protect Polling Locations, Human Rights Watch, <https://www.hrw.org/news/2023/02/27/nigerias-elections-remain-risky-many-citizens>, 2023.
- BBC News, Namibia Votes in Africa's First Election Poll. <https://www.bbc.com/news/world-africa-30241377> , 2014.
- Caarls, S., E-voting Handbook: Key Steps in the Implementation of E-enabled Elections, Council of Europe, p.7, 2010.
- Camillus Eboh, Nigeria's Obi, Atiku Challenge Presidential Election Results, Reuters. 22nd March 2023, <https://www.reuters.com/world/africa/nigerias-obi-petitions-court-over-presidential-election-result-2023-03-21/> , 2023.

- Carback III, R. T, Engineering Practical End-to-End Verifiable Voting Systems, University of Maryland: Baltimore County, 2010.
- Christopher Zambakari, Military Coup in Niger: The Legacies of Colonialism and the U.S. War on Terror in West Africa, The Zambakari Advisory, Africa Report No 14, SSRN: <https://ssrn.com/abstract=4546350> or <http://dx.doi.org/10.2139/ssrn.4546350>, 2023.
- Collins English Dictionary, Voting, <https://www.collinsdictionary.com/dictionary/english/voting>.
- Dana Indra Sensuse, Pandu Bintang Pratama and Riswanto Aris, Conceptual Model of E-Voting in Indonesia, International Conference on Information Management and Technology, 13th -14th August. P. 387, 2020.
- Dennis Erezi, Supreme Court Affirms Tinubu's Election, Dismisses Appeal by Atiku, Peter Obi, The Guardian 26th October, 2023, <https://guardian.ng/news/supreme-court-affirm-tinubus-election-dismisses-appeal-by-atiku-peter-obi/> , 2023.
- Elekwa, N.N and Okechukwu I. Eme, Post Election Violence in Africa: A Comparative Case of Kenya and Zimbabwe, The Indian Journal of Political Science, Vol. LXXII. No. 3. Pp. 833 – 844, 2011.
- European Digital Rights (EDRi), Electronic Voting Machines Eliminated in the Netherlands, <https://edri.org/our-work/edrigramnumber5-20e-voting-machines-netherlands/>, 2007.
- European Union Election Observation Mission Nigeria 2023, Second Preliminary statement, Abuja, Governorship and State House of Assembly elections, 2023.
- Friedman, B.A, West Africa's Decisive Intervention: A Lesson in Strategy, <https://thestrategybridge.org/the-bridge/2017/3/15/west-africas-decisive-intervention-a-lesson-in-strategy>, 2017.

- Gathii, James Thuo, and Olabisi D. Akinkugbe, “Judicialization of Election Disputes in Africa’s International Courts.” *Law & Contemp. Probs.* 84: p. 181, 2021.
- German Institute for Global and Area Studies (GIGA), Paper Ballots With Digital Transparency: Kenya’s Pioneering Election, <https://www.giga-hamburg.de/en/publications/giga-focus/paper-allots-with-digital-transparency-kenya-s-pioneering-election>, 2022.
- Gylfason Thoryaldur, *Democracy in Africa*, Africa growth Agenda, Vol. 10. No. 4, 2013.
- <https://info.kpmg.us/news-perspectives/technology-innovation/emerging-technologies-and-impact-on-society.html> , 2018.
- Idris Ademuyiwa and Adedeji Adeniran, *Assessing Data Protection and Privacy in Africa*, Centre for International Governance Innovation (CIGI), Paper No. 244, 2020.
- International IDEA Publications Office SE -103 34 Stockholm Sweden, <https://www.corteidh.or.cr/tablas/28047.pdf>, 2023.
- International Institute for Democracy and Electoral Assistance (IDEA), *Introducing Electronic Voting: Essential Considerations*, Policy Paper, International IDEA Resources on Electoral Processes, 2011.
- Ira S. Rubinstein, *Voter Privacy in the Age of Big Data*, *Wisconsin Law Review*: 861, 2014.
- Kamotho Walganjo, *The Electronic System has added no value to our Elections, discard it*, *The Standard*, <https://www.standardmedia.co.ke/kamotho-waiganjo/article/2001470939/the-electronic-system-has-added-no-value-to-our-elections-discard-it>, 2023.
- Kogeda, O. P., & Mpekoa, N., *Model for a mobile phone voting system*

for South Africa, Proceedings of 15th Annual Conference on World Wide Web Applications (ZAWWW 2013), Cape Town: Peninsula University of Technology, 2013.

- M. Japhet, Military Coups and Military Regimes in Africa, *Scientia Militaria*, South African Journal of Military Studies, Vol. 8. No. 4. p. 1, 1978.
- Michelle Gavin. Democracy in Name Only for Africa, Council on Foreign Relations, <https://www.cfr.org/blog/democracy-name-only-africa>, 2023.
- Nathaniel Allen, The Promises and Perils of Africa's Digital Revolution, <https://www.brookings.edu/articles/the-promises-and-perils-of-africas-digital-revolution/#:~:text=Across%20the%20African%20continent%2C%20the,%E2%80%9Csmart%20cities%E2%80%9D%20are%20proliferating>, 2021.
- National Democratic Institute (NDI), The Constitutionality of Electronic Voting in Germany, <https://www.ndi.org/e-voting-guide/examples/constitutionality-of-electronic-voting-germany>, Germany: National Democratic Institute.
- Nnena Ifeanyi-Ajufo and Leena Koni Hoffmann, 'Tech Alone Won't Improve Trust in Nigeria's Elections' 23rd February, <https://www.chathamhouse.org/2023/02/tech-alone-wont-improve-trust-nigerias-elections>, 2023.
- Okediran, O. O., Omidiora, E. O., Olabiyisi, S. O., Ganiyu R. A., & Alo O. O., A Framework for Electronic Voting System, *International Journal of Applied Science and Technology*, 1 (4), 2011.
- Patrick J. McGowan, African Military Coup d'état, 1956 -2001: Frequency, Trends and Distribution, *Journal of Modern African Studies*, 2023.

- Philippe C. Schmitter and Terry Lynn Karl, 'What is Democracy...and is not' Journal of Democracy, Vol.2. No. 3 (Summer), 1991.
- Reddy, A. V., and Raghavan, S, Architecture of Multi-Channel Multi-Database. India: Network Systems Laboratory, Department of Computer Science and Engineering, 2009.
- Regulation (EU) 2016/679 of the European Parliament and of the Council of 27th April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation), 2016.
- Rose Mosero, Technology and Data Protection must go Hand-in-Hand, Carnegie Endowment for International Peace, <https://carnegieendowment.org/2022/08/08/in-kenya-s-2022-elections-technology-and-data-protection-must-go-hand-in-hand-pub-87647> , 2022.
- Sinan Kufeoglu, Emerging Technologies, https://www.researchgate.net/publication/361926605_Emerging_Technologies, ResearchGate.
- Todd Landman, Developing Democracy: Concepts, Measures, and Empirical Relationships, Centre for Democratic Governance Department of Government, University of Essex Wivenhoe Park Colchester, Essex CO4 3SQ United Kingdom, Sweden: Ministry of Foreign Affairs, 2007.
- Voter Registration: Basic Elements of Voter Registration, <https://www.un.org/womenwatch/osagi/wps/publication/Chapter4.htm>, 2023.
- Wig, T., and Rod, E. G., Cues to Coup Plotters: Elections as Coup Triggers in Dictatorships, Journal of Conflict Resolution, 60(5), 787-812, 2016.

Legal Perspectives on the Use of Emerging Technologies in Elections in Africa

- William Gumede, How Lack of Democracy Fuels Coups in Africa, Democracy Works Foundation, <https://www.democracyworks.org.za/how-lack-of-democracy-fuels-coups-in-africa/>, 2003.
- Yu, S., Big privacy: Challenges and Opportunities of Privacy Study in the Age of Big Data, IEEE Access, 4, 2751-2763, 2016.