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Challenges & Opportunities for the Implementation of e-voting in Nigeria:

Lessons from Namibia, India, Brazil and Indonesia

JULY 2021

European Union

List of Acronyms and Abbreviations

BEL	Bharat Electronics Limited
BU	Ballot Unit
CU	Control Unit
CVR	Continuous Voter Registration
ECES	European Centre for Electoral Support
ECIL	Electronics Corporation of India
ECI	Electoral Commission of India
ECN	Electoral Commission of Namibia
ECOWAS	Economic Community of West African States
ECONEC	Electoral Commission of West African States
EMB	Electoral Management Bodies
e-KTP	electronic resident identification card
EU-SDGN	European Union Support for Democratic Governance in Nigeria
EVM	Electronic Voting Machine
DRE	Direct Recording Electronic Voting Machine
ICTs	Information and Communication Technologies
INEC	Independent National Electoral Commission
KPU	Komisi Pemilihan Umum (General Election Commission of Indonesia)
PST	Public Security Test
PSU	Public Sector Undertaking
PVC	Permanent Voter Card
REC	Resident Electoral Commissioner
SADC	Southern African Development Community
SCR	Smart Card Readers
SEC	Superior Electoral Court
SIDALIH	Voter Data Information System Technical Guidance
TEC	Technical Expert Committee
VPN	Virtual Private Network
(VRKs)	Voter Registration Kits
VVPAT	Voter Verifiable Paper Audit Trail

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FOREWORD & ACKNOWLEDGEMENT

The deployment of Information and Communication Technologies (ICT) by Electoral Management Bodies (EMBs) has become an emerging global trend in the quest to improve electoral processes in the last 35 years.

Its proper application provides administrative efficiency, enhances transparency in electoral processes and outcomes and supposedly reduces long-term costs, while on the other hand, a deployment that does not conform to best practices or at best cater for certain inadequacies including considerations for legal requirements as well as procurement may lead to a poorly conducted elections that will further deepen distrust in the process and in the EMBs.

In furtherance of its commitment towards supporting EMBs in improving the electoral process, the European Centre for Electoral Support (ECES), in collaboration with the Network of Electoral Commissions of ECOWAS (ECONEC), Electoral Commissions Forum of the Southern Africa Development Community (ECF-SADC) and the Independent National Electoral Commission of Nigeria (INEC) in April 2018 organised a conference on "**Opportunities and Challenges in the use of technology in elections - Experiences from West and Southern Africa**".

The development of this paper - *Challenges and opportunities for the implementation of e-voting in Nigeria: lessons from international experiences* - is a follow up to the Abuja Conference, considering the ongoing discussion in Nigeria over further introduction of ICTs in the electoral process, including e-voting.

The principles of credibility, integrity and transparency in elections have remained at the core of electoral values, however, experiences show a steady decline in electorates trust and confidence in institutions managing elections as well as those providing support services (security agencies, judiciary in charge of electoral dispute resolution etc.).

On the other hand, to improve electoral integrity and boost electorates confidence, EMBs worldwide have increasingly deployed ICTs in various aspects of electoral operations especially biometric voter registration, voter authentication, and use of Geographic Information System for the localisation of polling stations], electronic balloting, the implementation of electronic or online voting, collation and transmission of results.

In comparison to application of ICTs to other aspects of electoral management and operations, the implementation of electronic balloting and e-voting is complex, capital intensive, of a highly sensitive nature accentuated by distrust among competing electoral stakeholders and above all, susceptibility to security breaches and perception of reduced transparency in the electoral process.

The aim of this paper is to highlight the challenges and key success factors and present policy options for an effective decision by the relevant authorities over the potential implementation of e-voting in for the organisation of future elections through analysing specific case studies from countries with a similar context as Nigeria such as India, Brazil and Indonesia. We have also included Namibia as one African example of a country, having implemented e-voting, despite having a different geographical, economic and social characteristic from Nigeria.

ECES is drafting this paper, considering its comparative expertise in advising EMBs in introducing ICTs in the electoral process across several countries. It aims to provide perspectives to the INEC and other electoral stakeholders in Nigeria on the challenges and opportunities for implementing an electronic voting solution for Nigeria.

As the EU's partner, implementing Component One (Support to INEC) of the European Union Support to Democratic Governance in Nigeria (EU-SDGN) programme, ECES envisages that the issues raised in this thematic paper will provide a backing to current debates on deepening the use of ICTs in Nigeria's electoral process. This is especially in the sensitive area of e-voting, thereby providing an important resource that could contribute to INEC's choice's as well as to future technical assistance to INEC and other EMBs in Nigeria.

I would like to warmly thank Professor Okechukwu Ibeanu, National Commissioner, INEC Nigeria, Ingeneer Chidi Nwafor, ICT Director, INEC Nigeria, fellow, Nigeria Society of Engineers (NSE), Cynthia Mbamalu, Program Director, Yiaga Africa, Jake Epelle, Executive Director, The Albino Foundation, Bukola Idowu, Executive Director, Kimpact Development Initiative for their invaluable contribution during the interviews they granted us, as well as Abdulhakeem Ajijola, cybersecurity expert and ICT for his great inputs shared with us for this paper.

Sincere appreciation goes to the ECES teams in Brussels and Abuja who worked assiduously with me and under my supervision in putting together this paper from our ECES team in Nigeria, with Hamza Fassi-Fihri, ECES Project Coordinator, Isiaka Yahaya, Senior Electoral Administration Expert and Manji Wilson, Deputy Project Coordinator.

Special thanks to Paulo Siqueira, a Senior Expert on ICTs in Elections, for bringing to bear his vast experience working on election technologies in several countries including Nigeria, as well as to Jide Ojo, Political Party Expert, who helped in the conduct of field interviews.

Fabio Bargiacchi
Founder & Executive Director,
European Centre for Electoral Support
16, July 2021

EXECUTIVE SUMMARY

As a follow up to the EMB conference on "**Opportunities and Challenges in the use of technology in elections - Experiences from West and Southern Africa**", which took place in Abuja in April 2018, the European Centre for Electoral Support through this policy paper aims to contribute to the discourse on deepening the deployment of ICT in elections through the potential implementation of e-voting, e-balloting or electronic transmission of results ahead of the General Elections and beyond. This paper which draws from international experiences aims to highlight the conditions for success as well as identify potential challenges that can impact the process if not well managed.

Inspiration for this paper was derived from the national discourse and public conversations promoting electoral integrity through the implementation of e-voting and the stated intention and plans of the Independent National Electoral Commission to implement e-voting or an ICT based balloting solution in future elections.

Being a qualitative study, seeking to present and analyse policy options, the paper adopted a mix of **desk review, interviews with key stakeholders** and **case studies** in highlighting salient issues that are prevalent in the implementation of e-voting. The experiences of four countries with similar demographic attributes and electoral context namely Namibia, Brazil, India and Indonesia were reviewed and lessons drawn for the Nigerian experience. To guide this discussion paper, an analysis of opportunities and challenges that provides an overview for key considerations in effectively implementing e-voting was conducted, with some recommendations proposed thereafter. ECES also interacted with the INEC National Commissioner in charge of electoral operations and the Director of ICT who provided some contextual analysis on the thematic issue of deploying an electronic balloting or e-voting solution in Nigeria's electoral processes.

Notwithstanding the absence of required legislative provisions at the time of publishing this paper, implementation of an e-voting solution is in the works, with a recent invitation to prospective vendors for a demonstration of available options, understandably a next step of ICT deployment for Nigeria's elections, following previous efforts and use of ICT in other aspects of election management, including the online registry of voters, biometric capture and authentication, uploading of results to a viewing only portal and a recent pre-registration of eligible voters. Furthermore, the Commission set-up an "Electronic Voting Implementation Committee" with the task of exploring the possibilities of introducing an e-voting solution in Nigeria's future elections. Indications are that INEC is exploring the deployment of an Electronic Voting Machine (EVM) within a broader application of technologies encompassing various electoral activities and processes which includes electronic voter registration, accreditation and voter's authentication, the e-day balloting, with the use of Voter Verified Paper Audit Trails (VVPAT), Collation and possibly Electronic Transmission of Election Results, some of which are dependent on the ongoing review of the legal framework. Several models (including hardware and software for EVMs) were presented to the Commission for consideration. While some of the solutions will involve outsourcing the whole system– from end-to-end – meaning that the provision of hardware and software and Operational Systems (OS) will be outsourced, other options present a mixed solution – with outsourced hardware (front-end) and internal development for the Software (back-end).

On the aspect of ensuring a secured e-collation and results transmission process, a probable option of transferring data would be directly from the EVMs to a main server, and at the same time print hard copies of the results as a back-up. Against the background of cyber-safety, past attacks on INEC websites and portals, INEC should consider implementing strong

security protocols, data encryption and security data tunnels for secured data transmission, most probably establishing a VPN (Virtual Private Network).

The recent creation of additional 56,872 Polling Units in June 2021, bringing the total number of polling units to 176,846, raises the question of availability of financial resources for the acquisition of almost 200,000 units of EVMs.

INEC is considering deploying EVMs that will include a Voter Verifiable Paper Audit Trail (VVPAT) as a back-up system also functional whether or not an e-collation and e-transmission process is eventually allowed by the law. This is a further step in promoting electoral integrity and transparency of the process, consistent with similar trends in countries reviewed. Effort to secure legislative approval for voting by electronic means in Nigeria is also consistent with comparative practices.

The issue of national ownership of hardware and software always comes to fore when considering the deployment of ICTs in electoral processes. While some countries possess the capacity to locally produce EVMs, like in the case of Brazil and India, others like Namibia resorted to outsource this procurement. However, these case studies, the countries ensured some measure of national control on the EVMs through the in-house design of the machines as well as development of software used. While two of these countries have successfully implemented e-voting in national or general elections like in Namibia and Brazil, others adopted a gradual approach of deploying at sub-national levels as seen in the case of Indonesia. However, most of the stakeholders interviewed are unanimous in their recommendation that a phased implementation of an electronic balloting or e-voting solution that will start with the off-cycle governorship elections in Anambra in November 2021 where modifications to the legal framework permit the electoral commission to conduct elections via electronic means and if there is sufficient time to procure the needed technology as well as train staff on these new tools, otherwise these considerations could begin with the Ekiti and Osun off-cycle governorship election in 2022 will be a more prudent option for INEC.

Based on the comparative approaches to voting by electronic means and the state of play within INEC, the study makes the following recommendations, among others:

1. Given the level of infrastructural development in Nigeria and low level of trust in the electoral system, the most sustainable and appropriate e-voting choice is the EVM with an integrated VVPAT.
2. There is need to clarify the practical modus operandi regarding the ballot counting phase, and sensitise public on whether the collation process will include manual counting of the paper-trails before the transmission of the electronic result or not, also depending on the provisions of the new Law, once adopted. Party agents and the public actively attend this phase and should be adequately informed and educated on the process, to mitigate the risks of communication gaps.
3. The same need for clarity and ad hoc security measures is expected in case of e-transmission of results, especially where there is limited or unavailability of network coverage for a direct transmission from the PU level to a central database.
4. The Continuous engagement of state institutions that can provide support for the implementation of e-voting such as the National Communications Commission, National Information Technology Development Agency, Nigerian Communications Satellite (NigComSat) etc, should be sustained as they possess key infrastructures that can further enhance implementation of such a system.

5. There is need for INEC to present an assessment on its level of preparedness to conduct e-voting as well as an analysis of the budget implications of EVMs being considered and the sources of funding.
6. Technology is fast evolving, hence the need to track these changes through a dedicated research team.
7. Consistent effort should be invested in ensuring the political parties and their representatives, as well as the general public are familiar with the methodology and processes of the e-voting to engender understanding and bolster confidence. INEC may wish to consider the periodic conduct of the Public Service audit/Trust along the line of the Brazilian model as one of the security strategies for the e-voting. Consequently, a robust inspection system, that will involve more stakeholders including representatives of political parties, CSOs and other stakeholders should be put in place at all stages of the e-voting process, "opening the books", allowing for external stakeholders to look at the software deployed, and test the systems ahead of elections.
8. INEC may wish to consider the institution of multi-layer level of security which will serve as checks at several points with an alarm system in case of attempted infiltration.
9. To serve as deterrent for hackers, the National Assembly should stipulate severe penalties for cybercrimes related to elections. This should be specifically included in the Electoral Act and the scope should naturally go beyond provisions of the 2015 Cyber Crimes (Prohibition and Prevention etc.) Act.
10. In developing the e-voting, INEC should adopt the principles of defensive approach, segregation of duties (with separate and distinct authorisation levels) and software independence.
11. Post-election audit systems should be put in place, as a systematic check for the validity and integrity of its electronic results, as it's progressively being the case in other contexts where e-voting has been implemented. Risk-Limiting Audits (RLAs) are one of these methods that are becoming popular whit EVMs using VVPAT[1].
12. In the absence of apparent domestic capacity to manufacture EVMs, the design of the equipment should leverage on in-house expertise like in the case of the Smart Card Readers with specifications tailored to peculiar needs and functionality;
13. In order to reduce the huge capital investment on the procurement of EVMs and other accessories, the option of local manufacture should be vigorously pursued through relevant national institutions and private sector players;
14. The option of leveraging on facilities and structures of other national institutions such as servers and networks should be explored in order to improve the potential for success as well as reduce cost;
15. To reduce the cost of election in the long run and justify the huge initial investment, the technology of the e-voting should be re-usable, even if needed to be adjusted or reconfigured, for at least four electoral cycles;
16. Credible and regularly-updated national identity systems are important for the election process. This will contribute significantly to reducing election-related costs, especially the cost of biometric voter registration.
17. The National Assembly should expedite action in the passage of the laws that will allow e-voting;
18. Effort should be made to ensure that e-voting laws are devoid of ambiguity and comprehensive enough to avoid lingering litigations after passage and election

[1] Risk-Limiting Audits (risklimitingaudits.org)

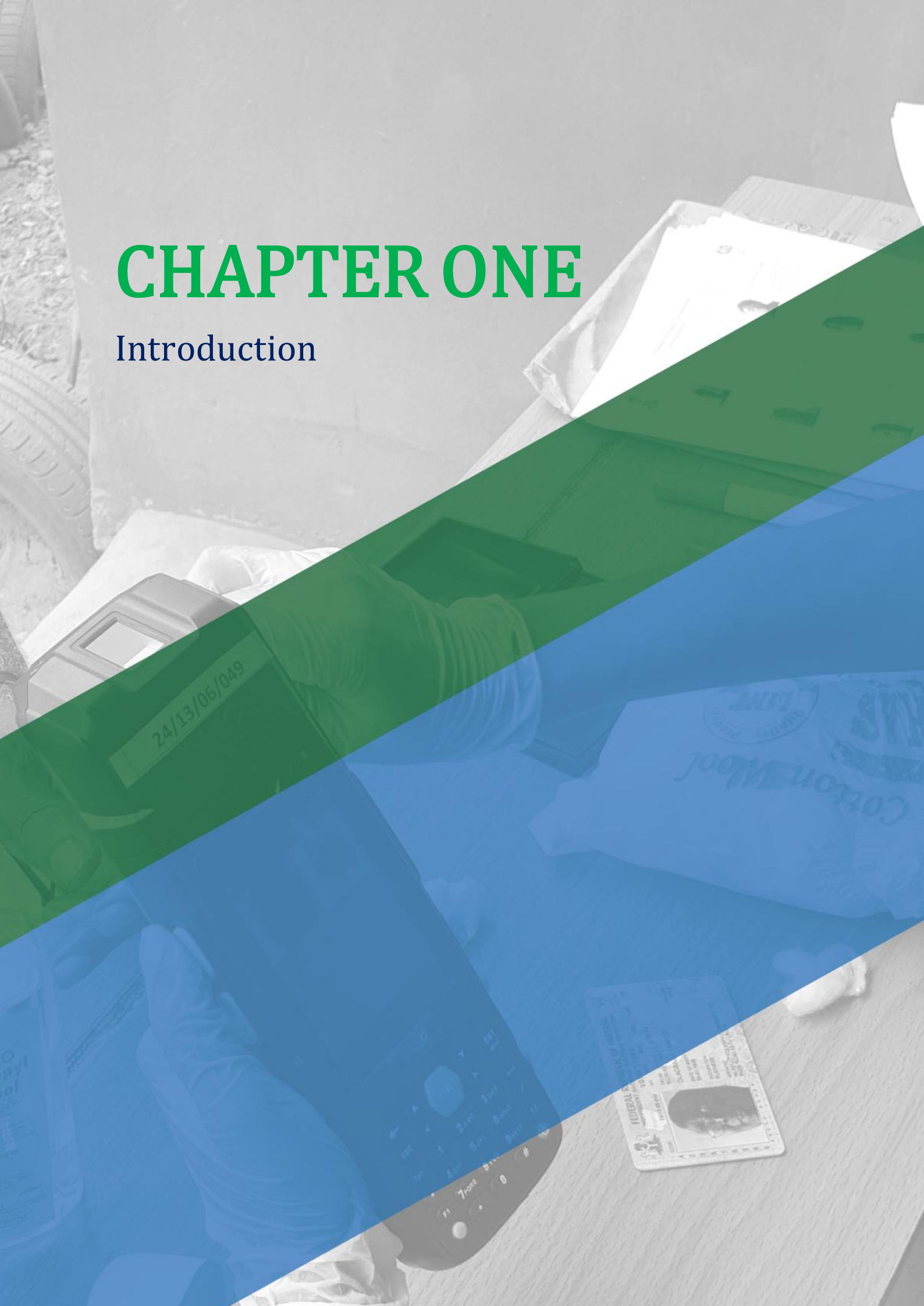
including the mandatory pre-audit of the technology used for the e-operations (as it was the case in Catalunya) and post-audit of the results (risk limiting audits (RLA);

19. To facilitate a learning process in the implementation of the e-voting, INEC should adopt a phased implementation of the e-voting starting with supplementary elections before full deployment in the 2023 general elections, provided the legal framework is adopted.
20. Consistent with international best practices, a longer preparatory period for the full deployment of the e-voting should be respected. In most cases, the timeline for proper implementation of technologies including e-voting is likely to be measured in years rather than months, even for pilots.[2]
21. Given the variations in the mode of voting, there is need for the security agencies to put in place an e-voting security architecture that will among others handle the physical security of EVMs as well as related facilities and installations.
22. In view of the fact that e-voting will not neutralise all persisting security challenges such as disruption of voting processes, intimidation of voters and attack on personnel, the existing security arrangements cannot be scaled down but rather strengthened for the peaceful and successful conduct of elections.
23. Implementation of e-voting will lead to higher security concerns at the PUs, where more pressure may be exerted on voters, as riggers will see this as the only point to potentially influence results; A similar scenario may play out at the collation Centers and other higher levels of electoral operations, especially in the constituencies where e-transmission is not possible in real-time at the PU level. There will therefore be the need to beef up security arrangements at the collation Centers, LGA and state offices as well.
24. Broader and continuous stakeholder engagements involving the National Assembly, political parties, CSOs, media, marginalised groups, security agencies, and other electoral stakeholders to strengthen commitment and acceptance of e-voting, neutralising misconceptions and resistance. This engagement should be initiated at the earliest stages, and include efforts of transparency on the technological aspects as well as on the non-technical ones.
25. Design and implementation of an intensive voter education on the implementation of e-voting with the following essential elements:
    a. Simplification of voting procedures to facilitate public understanding of the voting procedures;
    b. To allay and dispel the fear of intimidation that may arise through compromise of secret ballot;
    c. Inclusivity of the e-voting process for the participation of persons living with disabilities.
26. Procurement and deployment of election-related technology must be timely, transparent and inclusive to ensure buy–in from all stakeholders, ensure value for money and allow for testing and inspection**.**
27. The issue of knowledge transfer from experts on operating the EVMs after procurement of the equipment should be prioritised.
28. The electoral cycle should be factored in when procuring technology to allow sufficient time to conclude this aspect.

As INEC considers the various options towards the implementation of an electronic balloting solution amidst the ongoing review of the electoral legal framework that should also clear the way for its implementation, it is important to bear in mind that technology even at its best, does

[2] https://www.ndi.org/e-voting-guide/timeframe

not provide a full proof end-to-end solution to electoral challenges as there are other aspects including the human interface with technology that needs to be carefully handled. Technological driven electoral systems must be able to manage and create the necessary synergy between the People, Process and Technology (PPT).



CHAPTER ONE

Introduction

CHAPTER ONE: INTRODUCTION

The European Centre for Electoral Support (ECES) in collaboration with the Network of Electoral Commissions of ECOWAS (ECONEC) and the Independent National Electoral Commission of Nigeria (INEC) organised an international conference on ICTs in elections tagged "**Opportunities and Challenges in the use of technology in elections - Experiences from West and Southern Africa**". The objective of the conference, which took place in Abuja, from 9 to 11 of April 2018, was to build the capacity of participants to ensure that the use of Information and Communication Technologies (ICTs) in elections contribute to the strengthening of the credibility and transparency of electoral processes in ECOWAS Network of Electoral Commissions (ECONEC) and the Electoral Commissions Forum of Southern African Development Community (ECF-SADC) countries. The Conference reviewed, assessed and shared experiences on the basis of lessons learned by Election Management Bodies (EMBs) in the ECOWAS and SADC countries and others on the introduction, trend, impact and potentials of the use of election technologies.

At the end of the 3-day conference, and upon taking a critical and holistic look at the adoption, deployment and use of technology in elections over the last three decades and reviewing the impact of such deployment and appropriate lessons with a view to strengthening the sanctity, integrity and credibility of current and future elections and consolidating democracy and good governance in the ECOWAS and ECF-SADC regions, the following declarations were made:

1. *EMBs of ECONEC and ECF-SADC regions bear the burden of discharging the sacred national duty of organising and conducting free, fair, credible and transparent elections, bearing in mind that the outcome of a well conducted and generally acceptable election is the basis of good governance, peace, stability and development. On the other hand, a badly conducted election with disputed outcome is always a trigger for conflict, sometimes resulting in civil war with negative consequences, not only on the affected state, but on neighbouring states in particular and the region and the continent in general.*
2. *EMBs of ECONEC and ECF-SADC regions are aware that sustaining the usage of technology in elections is an expensive undertaking. This requires the mobilisation of adequate resources, which sometimes may be beyond the capacity of the state to bear as a sovereign responsibility. Therefore, the Private Sector, which requires a stable and peaceful political and socio-economic environment to operate and thrive, should contribute to meeting the cost of elections;*
3. *EMBs of ECONEC and ECF-SADC regions are willing to take advantage of the opportunities offered by technological innovations to improve the credibility of the electoral processes and to enhance the sanctity of the ballot and integrity of electoral outcomes. In doing so, EMBs should view the application of technological innovations in the electoral process as a facilitator, rather than a "magic bullet" for the delivery of good and credible elections by utilising simple, appropriate, cost-effective and sustainable technologies. The deployment of such technological equipment and applications should be secured in law, protected against intrusion and accompanied by appropriate training of electoral officials and effective civic and voter education to engender trust, confidence and ownership by all stakeholders;*
4. *EMBs of ECONEC and ECF-SADC regions are conscious of the numerous challenges associated with the adoption, deployment and usage of electoral technology, including*

the deficit of infrastructure and expertise, cost, choice and effectiveness of technology, as well as the twin issues of communication platforms and the security of sensitive election data in a world characterised by cyber warfare and election interference through the use of technology on a global scale by State and non-State actors;

5. *EMBs of ECONEC and ECF-SADC regions recognize that while the use of technology is a welcome innovation in the electoral process, elections are governed by law. Consequently, efforts must be made to address the gaps between the technological innovations and the responses of the legal framework to these innovations by enacting clear and unambiguous provisions in the electoral guidelines and regulations which permit their deployment in good time before elections. In enacting such "fit for purpose" provisions and regulations, EMBs must take into consideration such obligations under international and regional protocols and best practices governing elections;*
6. *EMBs of ECONEC and ECF-SADC regions are committed to strengthen capacity development and training of their electoral officials to promote efficiency, effectiveness and performance in the use of electoral technology in the delivery of free, fair, credible, transparent and peaceful elections and provision of better electoral services to the people. Efforts should be made towards the establishment of an African Technical Institute to drive home-grown research and innovation in electoral technology;*
7. *EMBs of ECONEC and ECF-SADC regions are committed to deploying appropriate technology to pool election resources, materials and experts for common use across both regions, based on the principle of mutual assistance, burden sharing and comparative advantage;*
8. *EMBs of ECONEC and ECF-SADC regions will continue to expedite action on the use of technology to provide access to information and promote political inclusivity and full participation and representation of women, youth, People Living with Disabilities and all other marginalised groups, including IDPs and the Diaspora in political process;*
9. *EMBs of ECONEC and ECF-SADC regions are fully cognisant that for technology to be an enabler in promoting electoral trust and integrity, it must be simple, accurate, verifiable, secure, transparent and understood by all stakeholders. While care must be taken that the use of technology is not over-regulated in terms of legal provisions, such usage must be well grounded in law as technology cannot operate in a vacuum or with itself; and*
10. *EMBs of ECONEC and ECF-SADC regions pledge to further collaboration and to use the Abuja Conference as a turning point in a collective effort to deepen the deployment of technology for credible elections and building of stable democracies in Africa.*

At the end of this conference, this declaration was signed on behalf of the electoral Commissions from both regions by the ECONEC Chairperson, Prof. Mahmood Yakubu, the ECF-SADC Chairperson, Adv. Notemba Tjipuena and ECES President, Monica Frassoni.

The development of this study is a follow up to the resolutions from the Abuja Conference. It takes place at a time when INEC is considering enhancing trust, integrity and access to the process through voting by electronic means in future elections and a concurrent legislative process of reviewing the electoral law, that also introduces provisions for unrestrictive deployment of technology in elections (electronic balloting, e-transmission and e-collation) under consideration in the National Assembly.

Inspiration for this paper is further strengthened by current national discourse and public conversations on promoting electoral integrity through the implementation of e-voting in

Nigeria and the stated intention and plans of the Independent National Electoral Commission to implement an ICT based balloting solution in future elections.

Despite the unprecedented gains of conducting six consecutive elections since 1999, amidst perceptions that Nigeria's democratic experiment is yet to be consolidated, there exists a commonly shared view by key electoral stakeholders that the electoral space is still plagued by a series of challenges that negatively impact the process. Consequently, over the years, the INEC has consistently invested considerable efforts towards improving the electoral process through measures that address institutional, operational and administrative challenges, as well as considered the introduction of some technological innovations, amidst the requirement for important legislative amendments that will allow certain reforms to be carried out. Notwithstanding these efforts, the challenge of enhancing transparency, mainstreaming inclusivity, increasing voter turn-out, addressing logistics failures, eradicating vote buying and other malpractices, preventing election violence among others still persists. In the midst of this collective concern to improve the electoral process, there has emerged the debate on the desirability or otherwise of adopting electronic voting and electronic transmission of results by a broad range of stakeholders, including, political enthusiasts, Civil Society Organisations[3], other interests' groups and Citizens who see this as a 'silver bullet' for Nigeria's electoral challenge.

Nigeria's electoral process has seen a series of technological solutions deployed through several aspects including the introduction of electronic register of voters, biometric registration of voters through the Direct Data Capture Machines (DDCMs), electronic authentication of voters through the Smart Card Readers (SCR) and more recently, the results viewing portal for uploading of Polling Unit results. In September 2020, INEC announced its desire to implement an electronic balloting solution in future elections and consequently invited potential vendors for a demonstration on the various types of Electronic Voting Machines (EVM) available. The aim of this demonstration was to enable the Commission analyse available options and technologies in e-voting that will provide clarity and guide its decisions. This is being coordinated by an Electronic Voting Implementation Committee.[4]

Section 52 (1b) of the 2010 Electoral Act, states that the use of Electronic Voting Machine is prohibited for the "TIME BEING". The use of the 'time being' indicates that the current electoral act recognizes that the use of EVM in Nigeria's elections is just a question of time.

Currently, provisions on the introduction of e-voting are being considered by the National Assembly in the Electoral Amendment process. In a draft version presented early July 2021[5], provisions that will facilitate the deployment of e-voting include:

- ***Section 41 (1)*** *which empowers INEC to provide suitable ballot boxes or any other voting devices (including Electronic Voting Machines) for the conduct of elections;*
- ***Section 47(2)*** *which makes the use of Smart Card Readers or any other technological device for the accreditation of voters and stipulates that election may be postponed on grounds of malfunctioning of SCR and non- replacement;*

[3] Electronic transmission of result in Nigeria and why it is necessary – Yiaga Africa publication, July 2021

[4] Mahmood Yakubu: Technological Innovation as Antidote to Election Rigging, Text of Lecture at Blueprint Newspaper's Lecture and Award Ceremony, 03/06/2021

[5] See annex

- ***Section 52 (2)*** *provides that "Voting at an election under this Bill shall be in accordance with the procedure determined by the Commission, which may include electronic voting."*

  Interestingly, the provision on electronic transmission of results seems to be controversial and a highly sensitive issue, generating divergent opinions. On Thursday, 15 July 2021, the Nigerian Senate passed an amended version of the new electoral bill upon a clause by clause consideration. However, on the issue of electronic transmission of result, a new Section 52 (3) was debated by the senate. The initial proposal by the Committee reads *"The Commission may transmit results of elections by electronic means where and when practicable."* After a heated session and exchanges on this provision, the senate amended and passed the section which now reads *"The commission may consider electronic transmission provided the national network coverage is adjudged to be adequate and secure by the Nigerian Communications Commission and approved by the National Assembly".* Similarly, the House of Representations consideration of the same proposal was greeted with mixed reactions and the session disrupted and rescheduled for the next day.

At the moment of publishing this paper, the debate is still ongoing and possible changes may occur in the process of securing presidential assent.

This controversy shows the difficulty of reaching consensus around this sensitive issue. In addition, concerns have been raised on the vagueness of some proposed provisions that may need more clarity to eliminate ambiguity and risks of legal challenges.

The use of technology in elections, including the deployment of e-voting is a fast-emerging global trend that has been embraced in at least 21% of the 123 countries surveyed by IDEA, while feasibility studies are ongoing in 57% of the countries.[6] Notwithstanding different approaches, key issues to be addressed are basically the same. Over the years, success stories and tales of challenges/failures have emerged to serve as lessons learned for EMBs deployment of e-voting. The policy paper draws from the common and sometimes divergent experiences of **Namibia, Brazil, India and Indonesia** in identifying challenges and success factors for implementing e-voting.

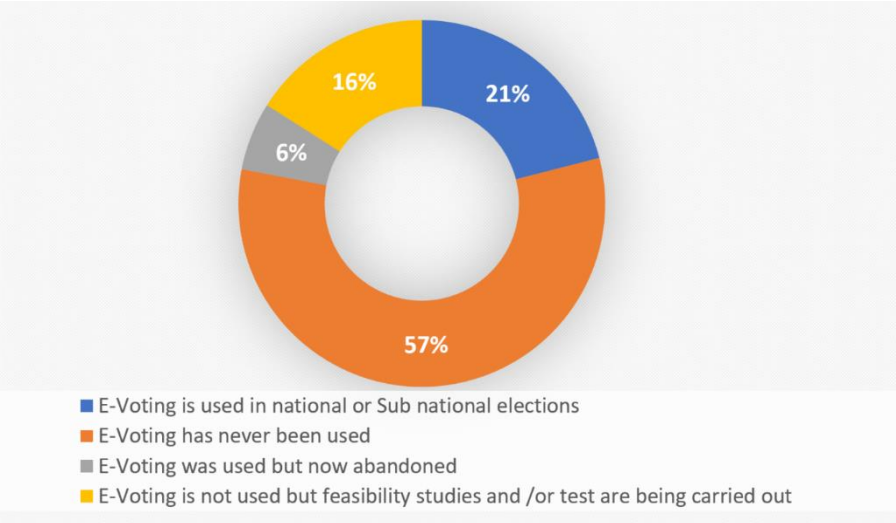


Figure I: Use of E- voting around the world, idea international (Data as of February 2015)

[6] https://www.idea.int/news-media/media/use-e-voting-around-world

1.1 Aim and Objectives

The broad objective of this study is to highlight the challenges and opportunities on implementing e-voting in Nigeria and the identification of potential areas of collaboration for technical assistance providers[7]. This paper therefore aims to contribute to the ongoing discourse on the potential implementation of e-voting possibly in upcoming off-cycle governorship elections: Anambra (November 2021) where modifications to the legal framework permits, Ekiti and Osun (July and September 2022), the 2023 General Elections and future elections, highlighting the conditions for success as well as identify potential challenges that can impact the process if not well managed. The specific objectives of the presentation are:

1. Undertake a review of state of play within and outside INEC in relation to the implementation of E-voting;
2. Undertake a review of comparative experiences of selected countries in implementing e-voting;
3. Highlight the opportunities and challenges of implementing e-voting, electronic balloting, e-collation and e-transmission of results
4. Identify salient issues to be addressed in Nigeria's quest to implement e-voting or an electronic balloting solution and;
5. Propose recommendations to ensure effective implementation of this process.

1.2 Methodology

Being a qualitative study, seeking to present and analyse policy options, a mix of **desk review** and **Key Informant Interviews (KIIs)** was adopted. The countries whose experiences were reviewed namely Namibia, Brazil, India and Indonesia were carefully selected due to certain similarities with the Nigerian electoral environment. While Namibia provides insights into the pattern of e-voting experience in a conflict challenged and developing economy like Nigeria, the choice of India and Indonesia was inspired by their huge voting population comparable to Nigeria's status as Africa's largest democracy. On the other hand, Brazil is a developed economy with fully developed infrastructure, implementing e-voting in such a setting will be very instructive on how to inspire lessons as Nigeria contemplates implementing this new aspect to its electoral process.

The **interviews** with key electoral stakeholders and practitioners allowed to gauge expectations, level of consensus and state of play on the implementation of the e-voting including the level of acceptability, cost impact on elections, voter education requirements and other relevant issues that will emerge upon the implementation of the e-voting. The interviewees include INEC representatives, representatives of Civil Society Organisation (CSOs) and IT practitioners. The interviews were complemented with desk reviews of primary and secondary sources on the subject matter.

To guide the discussion, some questions relating to challenges and solutions to effective implementation of e-voting were raised and examined within the context of the electoral environment, and sometimes comparing with how these issues were resolved in the case studies.

Based on the analysis of the 10 questions outlined below, some recommendations are proposed to improve the effective implementation of e-voting in Nigeria. The guiding questions are as follows:

[7] The latter in a separate document

1. What types of e-voting systems will be most sustainable and appropriate for Nigeria considering the current level of infrastructural development?
2. What steps can be taken to ensure security of the e-voting system towards preventing manipulation and hacking?
3. What steps can be taken to ensure accountability and transparency of the e-voting process?
4. What will be the implication of the adoption of e-voting on the cost of election?
5. Is there adequate legal framework to accommodate e-voting in Nigeria?
6. What do you consider an appropriate timeline for implementation of e-voting?
7. How can national ownership be promoted in the implementation of e-voting?
8. How can the implementation of e-voting mitigate the negative practices of election violence and vote buying in the electoral process?
9. What level of voter education / stakeholder engagement will be required for the effective implementation of the e-voting?
10. What are the procurement procedures to be adopted that will ensure transparency and guarantee value for money?

1.3 Justification for E-Voting in Nigeria

Over the years, the desirability or otherwise for the implementation of an e-voting system in Nigeria has lingered in the media space with various opinions and perspectives from the EMBs, electoral stakeholders, Civil Society Organisations and academics. From the tone and flow of thoughts as observed during literature reviews, interviews and statements credited to stakeholders, three broad reasons or hypotheses have been advanced to support the implementation of e-voting as a potential solution to Nigeria's lingering electoral challenges. These hypotheses which are based on perceived understanding of the e-voting as well as expectations are:

- ***Integrity hypothesis*:** This hypothesis sees e-voting as a tool for enhancing credibility and transparency of the electoral process through the elimination or reduction of negative practices and trends such as rigging, manipulation of results, low voter turnout and human errors associated with manual voting/collation system. It is believed that the automated system of the e-voting will mitigate these errors, thereby, improving the integrity of the process.
- ***Cost saving hypothesis*:** Concerned about the rising cost of elections, proponents of this hypothesis believe that e-voting is capable of eliminating or at least reducing high ticket election expenses such as printing and distribution of ballot papers, sensitive and other non-sensitive materials, recruitment and payment of a large pool of adhoc staff and election logistics, through the virtual management of these activities or with limited need physical operations or human interference. The cost of investing in e-voting infrastructure and material in the long run is presumably lower than the above-mentioned recurrent costs, hence ensuring cost-effectiveness.
- ***Preventing Election Violence (PEV) hypothesis:*** Proponents of this theory are of the view that e-voting, will reduce or eliminate acts of electoral conflicts and violence such as snatching of ballot boxes, disruption of voting at Polling Units, intimidation of voters and arsons due to a drastic reduction in human interactions. This will also reduce the large-scale deployment of security personnel, which often lead to intimidation of voters and militarisation of the electoral process in some cases.

Like every postulation, all these perspectives have their merits and demerits in reinforcing justification for and against e-voting. It is also important to note that none of these perspectives

have been propagated in a mutually exclusive manner as proponents agree that e-voting can be justified on more than one or all of these grounds.

Underlining all the theories or justifications for implementation of e-voting are corresponding expectations of what e-voting can deliver, the types of e-voting system to be adopted and the voting procedures. In other words, each of the theories has specific ideas of the types of e-voting system that will deliver the envisaged benefits. For example, the integrity and PEV theories assume that the whole process of e-voting will be automated with virtually no human involvement or physical activity while the cost saving theory has not reckoned with the fact that huge capital investment will be required at the initial stage to implement e-voting through EVMs.

However, each of these perspectives betrays a limited appreciation of the intricacies and complexities of e-voting. Even when it is not explicitly stated, the way benefits of e-voting have been propounded gives the impression that most commentators are envisaging an e-voting system with barest human or physical activities, tilting towards more of remote voting or internet voting, a complex form of e-voting which has only rarely been implemented in any part of the world.

It is important to draw attention to the inflated expectations of an e-voting system in current discourse in order to appreciate the state of play within and outside INEC on e-voting, the lessons learned from the experiences of other countries and place in proper context the appropriateness and feasibility of the recommendations proposed in the study.

1.4 Essential Considerations in E-Voting Implementation

The adoption of election technologies in Nigeria, like in most post conflict democracies, is a very complex subject matter as there are many variables, technical and non-technical, that need to be taken into consideration by the Electoral Management Bodies (EMBs) for successful implementation of e-voting. The capacity and manner in which these considerations are resolved will determine whether e-voting will constitute an asset or liability to the electoral process. Basic considerations on e-voting center around four key principles namely **SUSTAINABILITY, COST EFFECTIVENESS, APPROPRIATENESS, and TRANSPARENCY**[8], with security considerations serving as a cross cutting factor across all these principles. These principles are defined as follows:

- **Sustainability** – This refers to electoral policies and practices in relation to e-voting which are in line with the needs and expectations of stakeholders both now and in the future, aiming to minimise reliance on external inputs and resources.

- **Cost Effectiveness** – This principle stresses the re-usability of the e-voting technology to be adopted. The cost must relatively be cheaper than a manual voting system. However, this can be difficult due to the huge capital investment at the initial stage and rapid changes in the ICT sector which make ICT hardware and software procured few years ago become obsolete.

[8] Fabio Bargiacchi: "Counting the Ballots and Accounting for the Votes. The use of Technology for Enhancing the Transparency of the Electoral Process" presented at The Association of World Electoral Bodies (A-WEB) International Conference on Bucharest, 1-2 September 2017

- **Appropriateness** – This is usually used to describe suitable simpler technologies especially within the context of developing countries with weak infrastructural base and less literate population.
- **Transparency** - Every stage of a transparent election must be open to auditing and examination by actors and stakeholders (political parties, election observers and the general public), who are able to verify that the process is conducted in line with procedures and irregularities have not been perpetrated.
- **Security** - Underlining all these basic principles is the need for security of the e-voting system, not only in terms of physical safety of the ICT equipment and facilities but also protection from cyber-attacks and manipulation especially by third parties. Applying the principles of ***sustainability, cost effectiveness, appropriateness and transparency*** must therefore be considered within the overarching context securing an e-voting system.

The need to comply with these basic principles raises technical as well as non-technical issues to be addressed in the implementation of e-voting. These principles are universal; however, they can be uniquely applied in accordance to different electoral contexts and define the kind of questions to be raised and addressed.

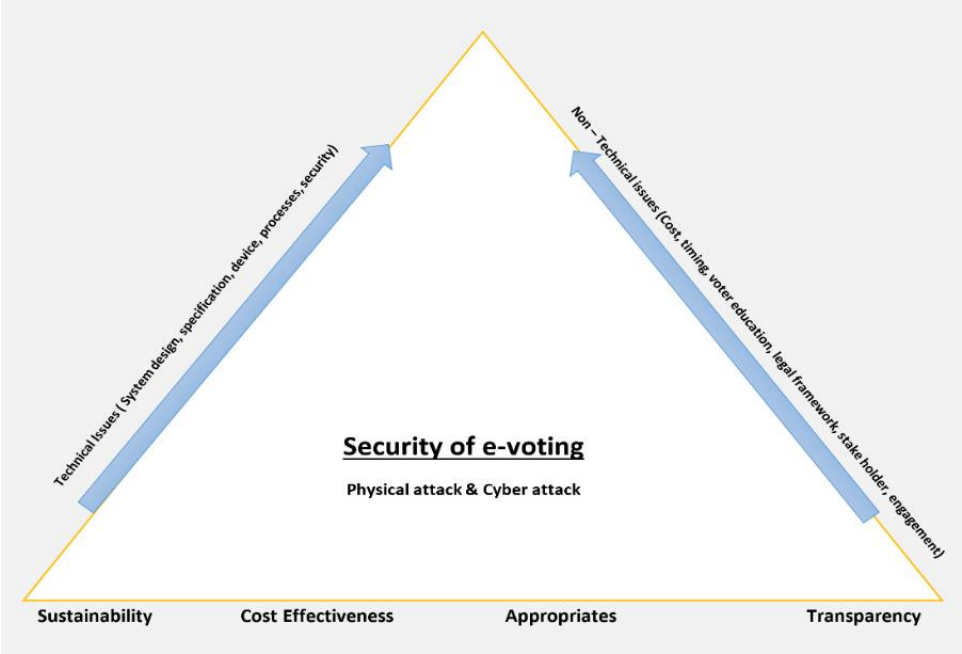
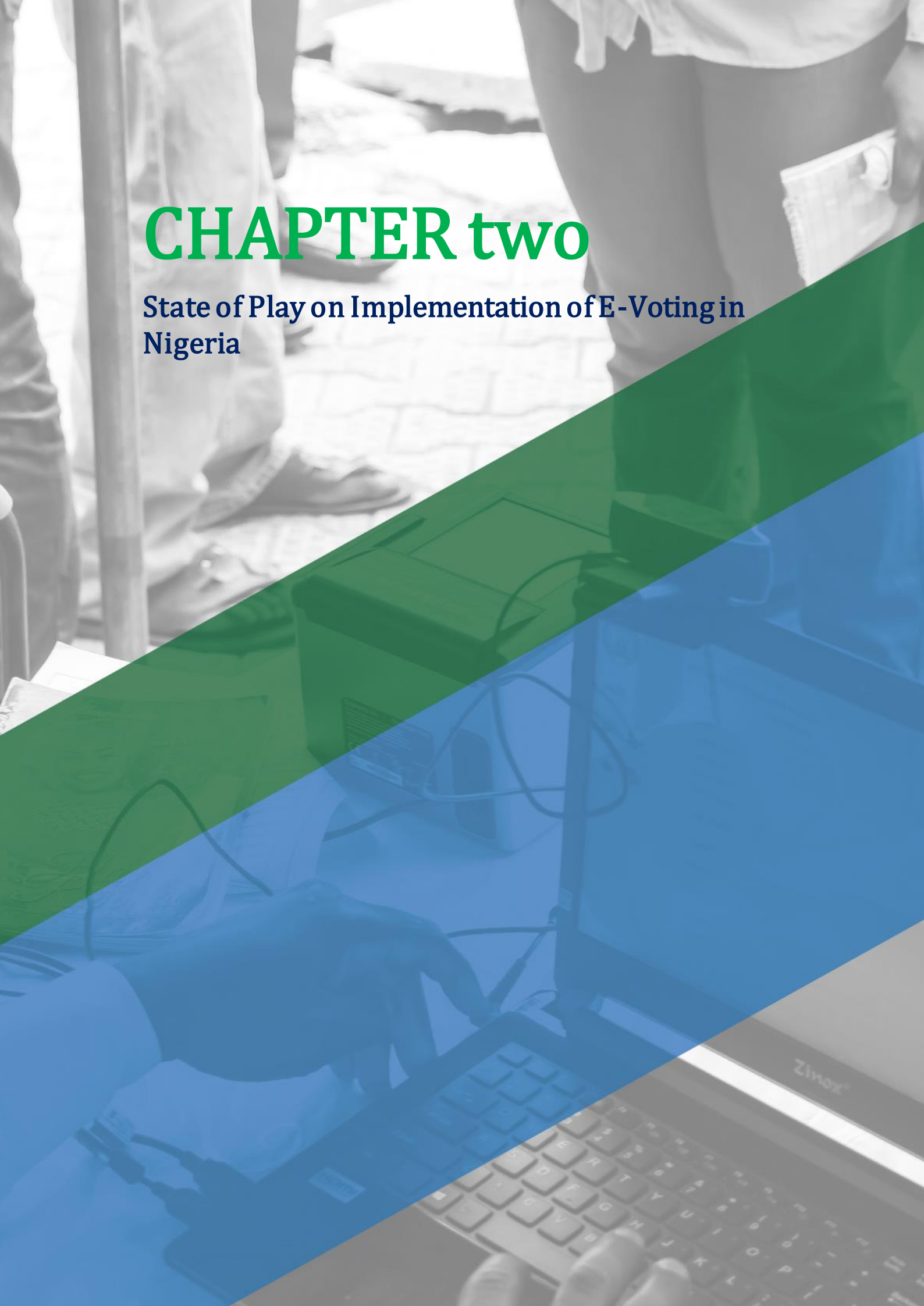


Figure II. Essential principles for consideration in implementing E-voting

Furthermore, the dynamics of the electoral environment, the interplay of political forces and the socio-economic conditions of the country among other factors pose additional elements to be considered in responding to these questions.

In order to provide answers to these questions and make available policy and administrative options to Nigeria as the discussion on e-voting subsists, it becomes necessary at this juncture to review the current state of play within INEC in relation to e-voting and some international experiences in the subsequent sections.



CHAPTER two

State of Play on Implementation of E-Voting in Nigeria

CHAPTER TWO: STATE OF PLAY ON IMPLEMENTATION OF E-VOTING IN NIGERIA

2.1 INEC, technological deployment over the years and current state of play

By virtue of its constitutionally backed mandate, and being the EMB saddled with the responsibility of conducting elections at the national level (Presidential and National Assembly Elections) and State level (Governorship and State Houses of Assembly elections) as well as FCT Area Council elections, INEC is centrally positioned as the primary stakeholder in the potential implementation of e-voting. While the responsibility for enacting laws rests with the National Assembly, the inputs of INEC on why, when and how to implement e-voting will provide critical inputs for any eventual legislation that should be incorporated in the legal reform process. So far, the deployment of e-voting has found institutional acceptance within INEC as demonstrated not only by previous openness and efforts towards election technology but seen in its engagement with providers of e-voting solutions.

As far back as 2004. INEC embarked on studies and campaigns on e-voting, a process that was truncated by restrictions in the electoral law. However, technology has been deployed in most of the election processes since 2003[9], with the utilisation of the Optical Mark Recognition (OMR) system to compute an electronic register of voters and the use of the Automated Finger prints Identification System (AFIS) to clean the date of double registrants, the use of Direct Data Capture Machines (DDCM) for the registration of prospective voters in 2006,an enhanced DDCM system in 2010 ahead for voter registration ahead of the 2011 elections, biometric accreditation of voters ahead of the2015 elections and the eventual deployment of the Smart Card Readers (SCR) for accreditation and biometric authentication of voters and a Polling Unit results viewing portal, which was experimented in a Nassarawa state constituency bye-election, the off cycle governorship elections of Edo and Ondo states as well as subsequent bye elections. In late June 2021, INEC recommenced the Continuous Voter Registration exercise which was suspended mid-2018 with an online pre-registration portal that allows prospective voters fill in their biodata ahead of the biometric data capture scheduled for a later date. The portal also allows already registered voters upload images and re-validate their information, confirm polling unit information or request for a replacement of defaced or damaged PVCs. Therefore, this naturally leaves the implementation of e-voting or an electronic balloting solution as the next component where further technology deployment is being considered for enhancement of Nigeria's electoral process.

[9] https://www.imedpub.com/articles/the-impact-of-ict-in-the-conduct-of-elections-in-nigeria.php?aid=22211

Figure III: INEC and E-Voting Implementation: The Journey so far

The highlights of the state of play at INEC, as gathered from sources within the Commission, in relation to e-voting are presented below:

i. The proposed Electronic Voting System will focus on the use of Electronic Voting Machines (EVM or e-ballots) with a broader utility or application, encompass various electoral activities and processes which includes electronic voter registration, accreditation and voter's authentication, e-day -balloting - with the use of Voter Verified Paper Audit Trails (VVPAT), E-Collation and Transmission of Results.

ii. INEC has been in touch with several solution providers and is currently analysing available technologies (Incorporating EVMs with an Electronic Transmission Results Systems) that could be deployed. There is no official decision on the technology or model to be adopted.

iii. The VVPAT envisaged aims to include a printed ballot, with three categories of voter's records namely the electronic ballot, recorded at the EVM, a printed ballot, that will be automatically stored into the ballot box attached to the EVMs with no human interference and a printed ballot for the voter. The objective is to stimulate confidence in the voting process.

iv. In relation to the hard and software for the EVMs, several models are being considered. While in one model, the whole system can be outsourced– from end-to-end – meaning the provision of hard and software as well as Operating Systems (OS) being outsourced, the option of a mixed solution – with outsourced hardware (front-end) and internal development for the Software (back-end) is also being considered.

v. E-voting can only be implemented permitted by the electoral legal framework. Consequently, there's the need for an amendment of the electoral act in order to allow unrestricted conduct of elections via electronic means. This will pave the way for INEC

to introduce EVMs, as well as implement e-collation and transmission of electoral results. This is also necessary to avoid legal contestations. If these legal issues are resolved in 2021, INEC may be able to deploy EVMs in the 2023 Nigerian general election, all other factors duly considered.

vi. The electronic update of the voters registers now regular through the Continuous Voter Register as well as the periodic cleaning of the data through an improved Automated Finger print Identification System will ensure excellent data quality as a key requirement to facilitate responsiveness of EVMs in future elections.

vii. With the envisaged deployment of E-voting, INEC plans to capture additional biometric features like facials as this will strengthen the identification of voters and integrity of the register. This necessitated the design and procurement of a new Voter Enrollment Software, which will among other functions capture facial data.

viii. For the transmission of results, the EVMs would transfer the data to a main server only after printing hard copies of the results. Where there is no/limited internet connectivity, the EVM at the end of voting and collation will be moved to a location with better coverage. However, this will be upon confirmation of Section 50(2) of the ongoing legal reform process, as there is still an ongoing debate around the issue of electronic transmission of results.

ix. Against the background of cyber-attacks and the activity of hackers, INEC will implement strong cyber security protocols, data encryption and security data tunnels for secured data transmission, most probably establishing a VPN (Virtual Private Network).

x. One critical issue to be addressed is the availability of financial resources for the acquisition of EVMs, especially with the recent creation of additional 56,872 polling units in June 2021, bringing the total number of polling units to 176,846. This means that INEC would need to procure about 200,000 systems (considering a minimal 20,000 for backup).

2.2 Sub National Elections and E-Voting: Experiences of SIECs

The desire to deploy e-voting has also been a recurring conversation for election administration at sub-national levels especially, in the conduct of local government elections conducted by the State Independent Electoral Commissions (SIECs)[10]. In May 2018, Kaduna SIEC piloted e-voting in local Figure IIV:EVMs deployed in Kaduna State Local Government Elections

government elections, becoming the first real test of such a system in Nigeria. The Electronic Voting Machine (EVM) deployed during this election was specifically built for Kaduna SIEC, by Chinese based SMPTECH, the same company that manufactured the handheld Smart Card Readers deployed in the 2015 General Elections in Nigeria. The EVMs are box like devices, shaped in medium sized printers and weighing 12kg each. It was also gathered that the 6,000 units procured for the 2018 local government elections had the list of then registered 46 political parties that participated in the election[11] Integrated into them.

[10] The State Independent Electoral Commissions (SIECs) derive their existence from the provisions of Section 197 (1) (a) of the 1999 Constitution of the Federal Republic of Nigeria (as amended). By the provision of Section 198 of the same Constitution, the Chairman and Members of the Commission shall be appointed by the Governor of the State and the appointment shall be subject to confirmation by a resolution of the House of Assembly of the State

[11] https://guardian.ng/politics/issues-in-kaduna-lg-poll-electronic-voting/

In his assessment on the level of success of the Kaduna experience, a key opposition figure, Salisu Shuaib Dawaki, Publicity Secretary, Coalition of Nigerian Political Parties of Nigeria (CNPP), Kaduna State chapter declared "The machine worked perfectly, and along the line after the election, the ruling party went ahead to do what they liked. But, it was very difficult for them to change results, because of some little protection that it has," he added, even as he urged INEC to adopt Electronic Voting, in order to ease suffering on general election day.[12]

According to the former Chairman of Kaduna SIEC, Dr Saratu Audu-Dikko, three days to the council election, the Commission engaged in a sensitisation of electorates across the 255 wards in the state. The EVMs were deployed to the wards for interface and interaction. She added that the EVM is easy to understand and operate, noting that it contains the logo of all political parties. Concerning the security of E-voting, she stated ''we do have a back-end system, where we watch the elections as they progress on field so we could see what was happening, we could see the results developing and the results were also transmitted electronically."

Figure IV:EVMs deployed in Kaduna State Local Government Elections

According to her, the system was very simple and secure. "There is a feature on this machine that can actually authenticate PVCs and verify finger prints. Both of this can be deployed. I believe it's possible for Nigeria to totally go electronic in voting, maybe not in this 2019 election, but future elections."[13] The adoption of the EVM was given legislative backing by the Kaduna State House of Assembly through an act that made provision for it and the use of smart card readers.

However, plan to deploy e-voting in Bayelsa State did not receive a favourable outcome like was the case in Kaduna. When asked about the plan to deploy e-voting, the Chairman of the

[12] https://guardian.ng/politics/issues-in-kaduna-lg-poll-electronic-voting/
[13] Ibid

State SIEC, Dr Bertola Perekeme, declared "Although the electorates have been yearning for an electronic voting system, which is capital intensive, preparations for electronic voting is a totally different exercise. Apart from its capital-intensive nature, it also requires some level of manpower to manage it. It can't take anything less than one year to plan''.[14]

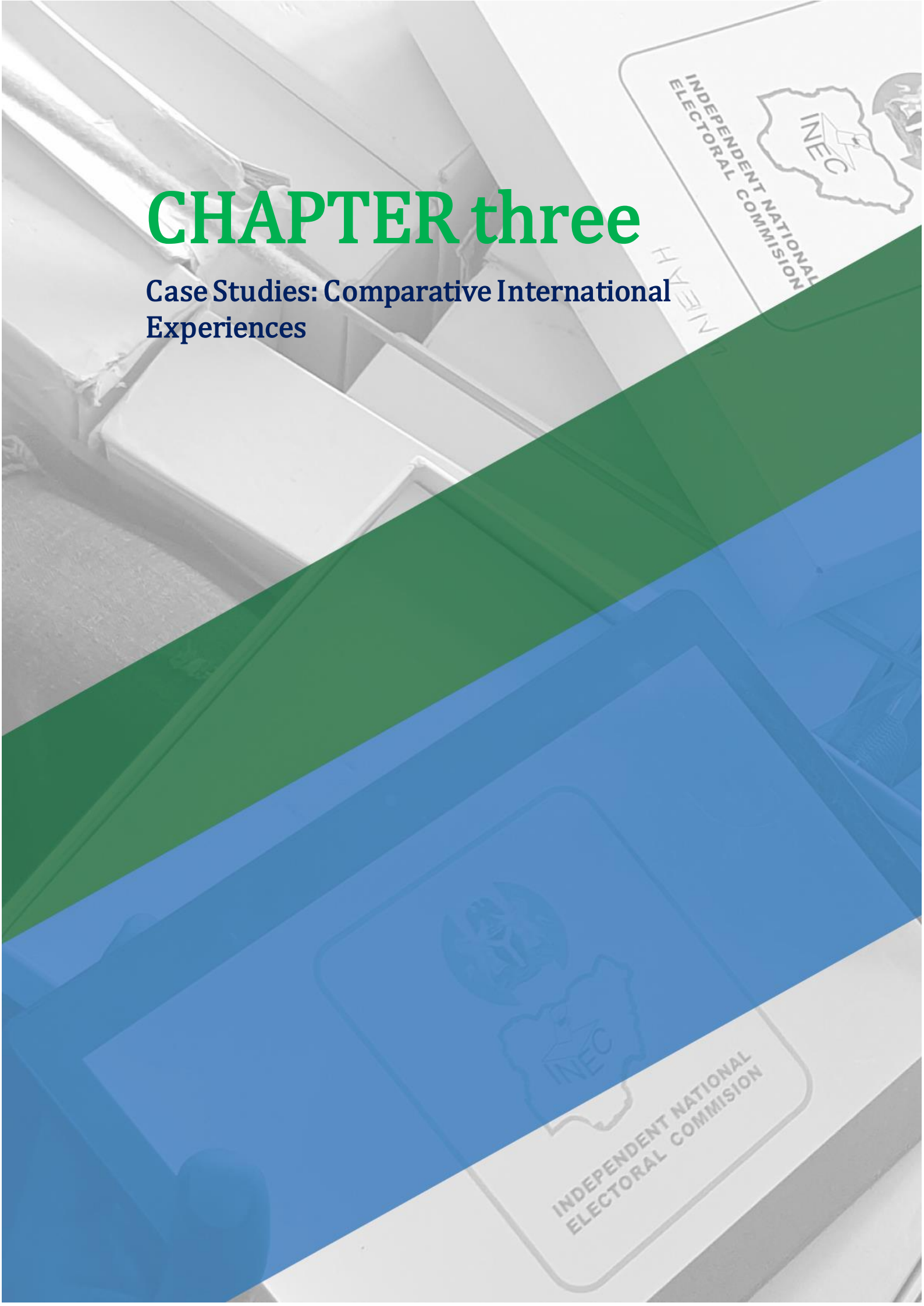
Interestingly, the use of e-voting has been gaining attention among non-EMB entities such as professional associations and political parties who have deployed the tool in their respective internal elections. Following the amendment of its constitution which introduced electronic voting in the election of officers, the Nigeria Bar Association in 2015 adopted e-voting through solutions provided by Grace Infotech Limited which saw Abubakar Mahmoud defeat his rival, Joe-Kyari Gadzama. However, following allegations of electoral manipulation and charges, the NBA accepted the bid of CHAMS Plc, an integrated identity management company for the conduct of its elections in February 2018. [15]

Also lending support to the implementation of e-voting, the Minister of Science and Technology, Chief Ogbonnaya Onu stated that Nigeria needs to reform its electoral system by adopting electronic voting, which will be instrumental to eliminate errors occasioned by manual computation of results. He added that with e-voting, election malpractices, fraud and less credible results would be a thing of the past and hence, encourage more Nigerians to participate in the nation's electoral processes.[16]

[14] https://www.blueprint.ng/lg-polls-bayelsa-not-ready-electronic-voting/

[15] https://www.icirnigeria.org/compromised-voters-register-flawed-e-voting-process-threaten-2020-nba-elections/

[16] https://nigeriannewsdirect.com/2023-working-towards-e-voting-to-disenfranchise-electoral-foul-play/



CHAPTER three

Case Studies: Comparative International Experiences

CHAPTER THREE: CASE STUDIES - COMPARATIVE INTERNATIONAL EXPERIENCES

As earlier stated, the implementation of e-voting has universal applicability which also allows for a comparative analysis of international experiences that could be instructive, also to Nigeria. Having reviewed the state of play of technology deployment and the potential implementation of e-voting in INEC as well as emerging trends at sub national levels, it will be apt at this stage to undertake a review of e-voting experiences in other contexts with a view to exploring how some of the basic questions were addressed. This section will therefore undertake a review of the e-voting systems in Namibia, Brazil, India, and Indonesia to distill important lessons learned.

3.1 E-voting in Namibia

3.1.1 Background

According to the ACE Network[17], Namibia is the first African country to deploy EVMs in elections. More than 890,000 (74%) of 1.2 million registered voters cast their votes across 4,000 polling stations in the 2014 Presidential election. The voter turnout rate was about 6% higher than the preceding 2009 paper-based election which recorded over 800,000 votes of the 1.2 million registered voters[18] at the time.

The use of ICTs in the Namibian electoral process started with the biometric mobile Voter Registration Kits (VRKs) system that digitally captured biometric data of applicants during the registration process. According to the ECN, the EVMs were first used in four local elections in August 2014 and in one by-election in November of the same year, before being rolled out in the General Elections of 28 November 2014.

Ahead of the 2014 presidential election, the Namibian government purchased 3,400 electronic voting machines (EVMs) from Bharat Electronic Limited (BEL)[19], an Indian defense PSU[20] which makes electronic voting machines (EVMs) and Voter-Verified Paper Audit Trails (VVPATs).

For the 2019 General Election, the Electoral Commission of Namibia (ECN) had registered 1,358,468 voters. The ballots were cast using EVMs in 1,386 fixed polling stations and 2,586 mobile units. A total of eleven candidates ran for the presidency and fifteen political parties contested the National Assembly elections[21].

3.1.2 The Namibian EVM

The equipment used in Namibia is basically the same model used by the Election Commission of India. The EVMs include a set of two devices, the Ballot Unit (BU), the Control Unit (CU), and a cable that connects the two units. The Ballot Unit has a button for every candidate and

[17] ACE project - https://aceproject.org/electoral-advice/archive/questions/replies/410523171

[18] https://technext.ng/2020/11/05/as-inec-plans-to-introduce-e-voting-in-2021-what-are-the-chances-of-success/

[19] India-made EVMs to be used in Namibia's presidential polls - https://mea.gov.in/articles-in-foreign-media.htm?dtl/23278/Indiamade+EVMs+to+be+used+in+Namibias+presidential+polls

[20] A government-owned enterprise in India is called a Public Sector Undertaking (PSU) or a Public Sector Enterprise.

[21] Electoral Commission of Namibia (ECN) - https://www.ecn.na/

can accommodate up to 15 candidates per BU, and with a maximum of four interconnected BUs, it was possible to accommodate up to 60 candidates.

Information about the software used in the Namibian EVMs are not available, but it is possible to infer that the development process should be similar to the ones used in India[22] where the software of EVMs was developed in-house by engineers from the Electronics Corporation of India (ECIL) and Bharat Electronics Limited (BEL), the Indian government owned companies.

Figure VI: Control Unit and Ballot Unit in Namibia

3.1.3 Challenges to implementation of E-voting in Namibia

In the 2014 "Performance assessment and post-election report", the ECN mentioned that administrative problems were experienced during the election process. Challenges were particularly experienced with the use of the Voter Verification Device that resulted in a delay of verifying voters. This problem was reportedly due to human error and not necessarily a device malfunction. For the ECN, the EVMs worked well and recorded the votes with accuracy. As a benefit of the use of the EVMs, they equally fast tracked the time spent at the voting stage[23].

3.1.4 Positive Aspects of using the EVMs

In his presentation at a workshop in Praia, Cape Verde, in November 2017, Mr. U. Freyer, a Commissioner in the Electoral Commission of Namibia, listed the benefits of using the EVMs to include faster vote count and tabulation, accurate results, efficient handling of complicated electoral systems formula that require laborious counting procedures, increased convenience for voters, increased participation and turnout, prevention of fraud in polling stations and during

[22] More information this can be found in this paper in the topic about "EVMs in India".

[23] Electoral Commission of Namibia - Performance assessment and post-election report - https://www.ecn.na/wp-content/uploads/2019/07/Post-Election-Report-2014.pdf

the transmission and tabulation of results by reducing human intervention and elimination of printing millions of ballot papers.

Also, according to Elections director Paul Isaak, the electoral commission spent $181,000 on paper for voting machines deployed in 2014 election compared to spending $1.81 million printing ballots in the previous election.[24]

3.1.5 Legal aspects

The 2014 Namibian Electoral Act allowed the use of electronic voting but also introduced the requirement that the use of voting machines be subject to the simultaneous utilisation of a verifiable paper trail. The Electoral Act provided for a transitional clause that allows different dates for implementing various provisions of the Act and deferred the use of VVPAT to future elections[25].

The use of EVMs faced some controversy before and after the election. Opposition parties filed an appeal at the high court saying that Indian-manufactured machines were without paper trails, demonstrating that they could not be trusted. During elections, there were also technical difficulties that slowed down the voting process.

In a decision from February 2020, the Namibian Supreme Court's Presidential Election declared that the use of paperless EVMs is unconstitutional. The central issue was whether the unconstitutional use of paperless EVM should result in the nullification of the 2019 Presidential Elections. The Court, in exercising its constitutional remedial discretion, declined to nullify paperless EVM elections retrospectively. Instead, it granted only prospective relief that future EVMs must be accompanied by a verifiable paper trail[26].

3.1.6 Lessons learned from Namibia Experience

1. Securing legal endorsement is a precondition for the implementation of e-voting as this was done through the 2014 Namibia Electoral Act which allowed its use;
2. The EVMs adopted should have a paper trail (VVPAT) to allow an additional layer of results authentication, thereby enhancing transparency of the electoral process and votes cast while also addressing potential conflicts that may arise from rejection of results by losers of elections;
3. E-voting notwithstanding its legislative endorsement, may continue to witness controversies where technical difficulties impact the voting process as was the Namibian experience.
4. An accurate biometric registration of voters ahead of the elections play a facilitative role in the implementation of e-voting and;
5. In the absence of local capacity to manufacture the EVMs, national ownership can be fostered through in-house design and customisation of the prototypes as well as development of the software.

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[24] https://technext.ng/2020/11/05/as-inec-plans-to-introduce-e-voting-in-2021-what-are-the-chances-of-success/

[25] Introduction of Electronic Voting in Namibia - Commissioner U. Freyer, Electoral Commission of Namibia Praia, Cape Verde November 2017.

[26] Ndjodi Ndeunyema, "Vote, But You Cannot Verify: The Namibian Supreme Court's Presidential Election Decision", (OxHRH Blog, February 2020), <http://ohrh.law.ox.ac.uk/vote-but-you-cannot-verify-the-namibian-supreme-courts-presidential-election-decision/>, Date of access – May -2021.

3.2 E-voting in Brazil

3.2.1 Background

The Brazilian electronic ballot box, or e-voting machine (EV), was first used in 1996 by the Brazilian Superior Electoral Court (SEC). Since then, the e-voting process has undergone numerous technological changes. The Brazilian electronic ballot box is considered [27] one of the safest voting machines globally. During the Brazilian 2020 Municipal Elections, more than 450 thousand EVMs were deployed with additional 52 thousand units reserved for contingencies.

Globally, the adoption of electronic voting without physical registration of votes is getting less attractive. The only country that still carries out this practice on a national scale is Brazil. According to the Brazilian expert group, the way forward for the current model of electronic voting adopted in Brazil should be a gradual transition to a system that produces physical record of the vote that can be, consequently, audited.

3.2.2 The Equipment

Until 2018, the company Diebold was the manufacturer of Brazil's EVMs, while the electronic components were built by a company belonging to Diebold or a partner company from China. In 2020, the SEC started a process to procure up to 180 thousand new EVMs, the company Positivo Tecnologia won the contract. The objective was to replace some of the 470,000 EVMs currently in use. EVMs manufactured in 2006 and 2008 will be replaced by the new models that are planned to be deployed for the 2022 regional elections[28].

All the EVM equipment were manufactured by the company hired through a bidding process by the Court with the products inspected by technicians from the institution. The EVM software was developed by the SEC, including the candidates' management and results management systems.

The EVMs have an average functional life of ten years. During this period, and between the elections, they undergo various tests. The batteries are recharged every four months. During usage and in the event of a power outage, the batteries have an operating autonomy of more than ten hours.

On voting day, the ballot box is manually operated and not connected to the internet or the SEC system. Consequently, there is no way to access or try to invade it remotely. The equipment works only at the time and date of the elections, normally from 8am to 5pm.

[27] https://politica.estadao.com.br/noticias/eleicoes,urna-eletronica-fez-do-brasil-uma-referencia-mundial-diz-um-dos-criadores-do-equipamento,70003510025

[28] https://www.tse.jus.br/imprensa/noticias-tse/2020/Julho/tse-confirma-empresa-positivo-como-vencedora-para-aquisicao-de-novas-urnas-eletronicas

Figure VII: Brazilian EVM Components

3.2.3 System Inspection and Audit

Since its initial implementation, the system in use by the EVMs has been constantly improved and new features added to guarantee security and transparency.[29] Six months before each election, the system is opened for verification to several institutions, such as political parties, the Public Prosecutor's Office, the Federal Police, universities, and professional associations. The objective is to verify the programs that will be adopted.

3.2.4 Security Tests

According to the SEC, the device had several layers of security that prevent invasion and access to information by third parties . In the event of an attempted attack, a feature hangs the program and prevents it from being manipulated by an outsider.

Since 2009, the SEC has been organising Public Security Tests (PST). Until 2016, there was no legal provision to SEC to conduct the PST, however, a legal resolution was then established as a mandatory requirement for the tests. The PSTs are attended by selected specialists, and with the presence of staff from Electoral Court of Justice, members and representatives of political parties, journalists of Electoral Justice, members of international organisations, Brazilian Federal Police and Brazilian Army.

There were some criticisms related to the time earmarked for the inspection of thousands of lines of code. During all editions of the Public Security Tests (PSTs), flaws were found in the EVM, and in 2017, the most serious one was discovered: the complete compromise of the

[29] https://agenciabrasil.ebc.com.br/eleicoes-2020/noticia/2020-11/eleicoes-2020-urnas-sao-seguras-e-uso-e-transparente-afirma-tse

integrity of the EVM software. The demonstration indicated the possibility to change the software, without restrictions.

3.2.5 Electoral Results Tallying and Transmission

The Brazilian voting system implemented by the SEC has made commendable progress in eliminating human manipulation of votes, thereby ensuring security and transparency of the electoral process. Before being computed, votes must first be counted at the polling station upon conclusion of the voting exercise on election day. Thereafter, the presiding officer prints the results tally sheet from the EVM.

The results tally sheet is an extract of the votes that were cast for each candidate, without making any correspondence between the voter and the vote. It also contains information about polling station, EVM (ballot box), and the number of electorates that voted . After the voting is closed, the following files are recorded on the EVM: a) EVM report; b) Digital registration of the vote; c) Absentee voters; d) Electoral justifications; and e) Event log (Log).

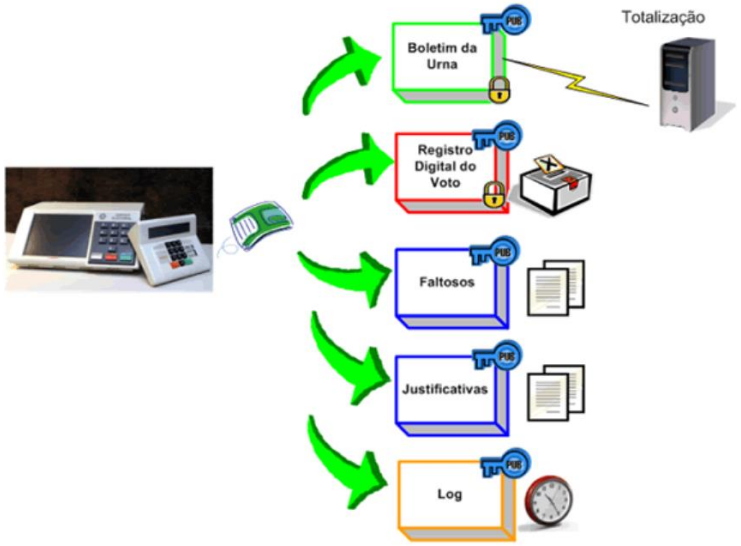

Figure VVIII. Brazilian election results tallying and transmission system

For the transmission of data, the Electoral Justice has its own system that accepts information sent by the EVMs which can only be accessed using an alphanumeric password as well as a token. The data is sent to the SEC through a VPN tunnel, on the internet, which connects to the exclusive Electoral Justice network. To ensure that information coming out of the EVM will reach its destination, each unit is uniquely configured with its own set of keys - digital certificates with numerous features.

3.2.6 Challenges to implementation of E-voting in Brazil

The e-voting experience in Brazil has been faulted on the basis of its huge cost. It has been posited that investments in e-voting are higher than spending in basic social programs that could alleviate poverty and provide more resources to improve basic education and healthcare. It is considered as an expensive toy belonging to the rich and privileged and which does not reflect the fact that Brazil is confronted with many pressing domestic demands and

competing priorities from healthcare, to water and sewage quality to housing and education needs.[30]

3.2.7 Next Steps on e-voting

Ahead of the 2022 elections, the Superior Electoral Court (SEC) is studying the adoption of a new voting system. According to the President of the Court[31], voting can be done online or by application. The implementation of this measure depends on the review of proposals made by private companies to the *Elections of the Future* ("Eleições do Futuro") project, which aims to initiate evaluations for possible changes in the electoral system. The project's objective is to use technology in favor of the voters and aims to explore innovations that could be deployed in the Brazilian elections, possibly providing an electronic voting system aligned with the available technological developments.

3.2.8 Lessons learned from the Brazilian Experience

1. According to the SEC, there are several layers of security that prevent invasion by third parties and the access to information contained in the device. If an attack is attempted, it causes a reaction by the system that hangs the program and prevents it from being executed by an outsider. This is a good safety feature.
2. On voting day, the balloting system is not connected to the internet or the SEC system. Consequently, there is no way to access or try to invade it remotely. The equipment works only at the time and date of the elections, normally from 8am to 5pm.
3. Since 2009, the SEC has organised mandatory Public Security Tests (PSTs). The PST are attended by selected specialists, and in the presence staff from electoral court of justice, members and representatives of political parties, journalists of Electoral Justice, members of international organisations, Brazilian Federal Police and Brazilian Army. This is an important trust-building measure that can be emulated
4. Another inspection procedure carried out by the Electoral Court is to select certain EVMs on the eve of the election and proceed with a simulation of the votes at the headquarters of the regional electoral courts. According to the SEC, this happens with the participation of representatives of the candidates, with cameras filming the process, there is a verification process to ascertain the votes correspond to those registered in the machine.
5. The possession of national capacity to produce EVMs not only reduces cost of EVMs but allows for flexibility in modifying the functionality of the machines. Brazil has constantly and easily migrated to higher models with 7 models deployed between 1996 and 2014.
6. The Brazilian Supreme Electoral Court regularly funds research aimed at improving security of elections. To illustrate this,, a hacking competition was organised in 2009 to demonstrate the high security of the systems and create additional confidence in the technology. In 2011, new biometric-based voting machines were developed. The Electoral Court started implementing biometric identification in the electoral process in 2012.
7. In Brazil – There is a legal provision for participation of the Brazilian Bar Association, the Public Ministry, and political parties in the stages of specification and development

[30] Ibid

[31] https://www12.senado.leg.br/radio/1/noticia/2020/11/16/tse-avalia-voto-online-ou-por-celular-para-eleicoes-de-2022

of all computer programs used in the EVM. In addition, all technology is internally developed by the SEC.

8. Six months before each election, the system is opened for verification to several institutions, such as political parties, the Public Prosecutor's Office, the Federal Police, universities, and professional associations. The objective is to verify the programs that will be adopted.

3.3 E-voting in India

3.3.1 Background

With more than 910.5 million people[32] registered to vote in 2019, India is reputed as the largest democracy in the world. Due to its large voting population, the use of e-voting system in India becomes extremely important in order to minimise the risk of glitches on electoral logistics. The e-voting project began in 1977, when the Election Commission of India (ECI) requested the Electronics Corporation of India (ECIL) to study the possibility of using an electronic device for conducting elections, consequently, it was assigned the task to design and develop an electronic gadget for conducting elections. In 1979, a prototype was developed, and its operation was demonstrated before representatives of political parties on 6th August 1980. The EVMs were developed by the Electoral Commission, in partnership with two government-owned companies, the Electronics Corporation of India (ECIL) and Bharat Electronics Limited (BEL). The first Indian EVMs were deployed in the 70-Parur Assembly Constituency of Kerala in the year 1982.[33]

The latest addition to the Indian EVM is the Voter Verifiable Paper Audit Trail (VVPAT), which was introduced in 2013, as an additional measure of transparency in the voting system. The task of developing a VVPAT model was assigned by the Commission to the EVM manufacturers under the expert guidance of the Technical Expert Committee (TEC). VVPATs with EVMs were used for the first time in a bye-election from 51-Noksen (ST) Assembly Constituency of Nagaland.

3.3.2 The Equipment

The Indian model is designed with two units: the control unit and the balloting unit. These units are joined together by a cable. The control unit of the EVM is kept with the presiding officer or the polling officer while the balloting unit is attached to the voting compartment to be used by voters. This is done to allow the polling officer verify each voter's identity.

With the EVMs, instead of issuing a ballot paper, the polling officer will activate the Ballot button which enables each electorate to cast a vote. A list of candidates' names and/or symbols is available on the machine with a blue button next to it. The voter can press the button next to the choice candidate's name

[32] The times of India - https://timesofindia.indiatimes.com/india/6-charts-show-how-big-is-the-indian-democracy/articleshow/79060500.cms

[33] Election Commission of India (ECI) https://eci.gov.in/

The **Voter Verifiable Paper Audit Trail System (VVPAT)** was first introduced in 2013 to further increase transparency of the election process. The VVPAT is an additional unit attached to the EVM, which prints a small slip of paper that carries the symbol, name and serial number of the candidate voted for, and is visible for seven seconds in the viewing window. After activating the button on the balloting unit (BU), the voter can view the printed slip on VVPAT through the viewing window and thus verify that the vote is recorded for the Candidate of his/her choice.

. Figure IX:EVM + VVPAT set-up used in India

The EVMs do not require electricity and run on a battery assembled by Bharat Electronics Limited/Electronics Corporation of India Limited. An EVM can record a maximum of 2,000 votes. The lifespan of an EVM is 15 years and votes recorded in the Control Unit (CU) can be stored up to its lifetime, except when erased. Where a Court order to recount is issued, the Control Unit can be reactivated by simply fixing the battery and it displays the result stored in the memory.

3.3.3 The Voting Process

In order to reinforce transparency in the voting process, on e-day, the electoral officers conduct a mock poll by asking the polling agents to record their votes use this to certify that the result displayed is in accordance with the choice recorded by them. Thereafter, the Presiding Officer will clear the result of the mock poll before commencement of the actual polling.

The EVM software is designed to allow only one vote for each electorate. This is done using the ballot unit after the Presiding Officer enables its functionality from the Control Unit. The next vote can only be recorded after the Presiding Officer enables the ballot from the Control Unit, and the same process for the subsequent votes.

When the voter presses the `blue button' against the candidate and symbol of his choice, the lamp against symbol of that particular candidate glows red and a long beep sound is heard. One interesting feature of the India EVM is that it is programmed to record only five votes in a minute and in half- an –hour, only a maximum of 150 votes can be recorded.

In order to solve the challenges arising from breakdown of EVMs, an Officer with spare EVMs is assigned to cover about 10 polling stations on the day of poll, for immediate replacement of any broken-down machine. The votes recorded from the malfunctioning EVMs are retained in

the memory of the Control Unit and is sufficient to proceed with the polling after the EVM malfunction. It is therefore not necessary to re-start polling from the beginning.

THE ECI has established several strict administrative and security protocols to maintain the EVM safety and security. These include technological safeguards; administrative procedures; storage and transportation during elections and non-election periods, protocol for repairs, EVM Tracking Software (ETS) to manage the identity and track the physical presence of all EVMS/VVPATs, and physical Verification of EVMs.

3.3.4 Costs

The Cost of the M2 EVMs (manufactured between 2006-10) was Rs.8670 ($116.8) per EVM (Balloting Unit and Control Unit). The cost of M3 EVMs has been tentatively fixed at about Rs. 17,000 ($229) per unit.[34] Even though the initial investment seems somewhat heavy, in the long run, it is budget friendly, considering the savings made from printing of ballot papers, transportation and storage as well as a substantial reduction in the payment of polling and counting staff.

3.3.5 Next Steps

The Election Commission of India is working on a new e-governance initiative that is likely to allow electors to vote from far away cities without moving to the designated polling station of their respective constituencies. The ECI has tied up with the Indian Institute of Technology Madras (IIT Madras) to develop this new technology under the 'Digital India' programme[35].

3.3.6 Lesson learned from India Experience

1. The India EVM model of 5 and 150 persons balloting per minute and per 30 minutes respectively, offer the benefits of considerably reducing the number of voters per polling unit. Comparatively, in Nigeria, which has an average of 500 persons per PU, voting can be concluded within 2 hours. Additionally, this can offer the possibility of reducing the number of polling units with a quick turn-around time for voters per PU, especially in situations when such reduction will not compromise voters' access.
2. The EVM VVPAT with documented ballots for voters enhances the transparency and credibility of the electoral process. Five copies of the results tally sheet are printed and signed by the presiding officer of each polling station and by representatives of the political parties. The five copies are assigned to specific destinations: the first is posted on the polling station, to publicise the result; three are added to the polling station report and forwarded to the respective electoral registry; and the last copy is delivered to the party representatives.
3. National production of the EVM machines offers the possibility of considerable reduction in the unit prices of the EVMs which averages $116 for the M13 and $229 for M3.
4. At close of polling, the EVM is moved to the Counting Hall or Counting Centers and, in presence of candidates. Thereafter, the seals, with unique IDs containing the signature of polling agents on CU, are presented to representatives of candidates before the start of counting. The date and time of counting is fixed by the ECI. Ideally, counting

[34] https://www.jagranjosh.com/general-knowledge/cost-and-place-of-manufacturing-of-evm-in-india-1555398297-1

[35] Election Commission looks to develop mobile voting technology to track down 'Lost Votes' - https://government.economictimes.indiatimes.com/news/digital-india/election-commission-looks-to-develop-mobile-voting-technology-to-track-down-lost-votes/74171792

of votes for a constituency should be done at one place, preferably at the Headquarter of the Regional Office in that constituency.[36]

5. In India, the lifespan of an EVM is 15 years and votes recorded in the Control Unit (CU) can be stored up to this lifetime until, unless erased. Where a Court order for a recount is issued, the Control Unit can be reactivated by fixing the battery and the result stored in the memory is accessed.

3.4 E-voting in Indonesia

3.4.1 Background

With a current population of 276,319,852[37], and more than 192 million registered voters, Indonesia is reputed as one of the largest democracies in the world. Since independence, Indonesia has held 11 general national elections, from 1955 to 2019, which is an indication of the stability of its political system.

Due to its large population, Indonesia maintains an expansive structure for conduct of election, with 810,283 polling stations set-up across the country in the 2019 election and an estimated 6 million poll workers. With an average voter turnout of 75.26%[38] in the 2019 election, political participation in Indonesia is impressive.

There are three election management bodies (EMBs) in Indonesia: The General Election Commission (Komisi Pemilihan Umum, KPU), the Election Oversight Body (Badan Pengawas Pemilihan Umum, Bawaslu), and the Honorary Council of Election Management Bodies (Dewan Kehormatan Penyelenggara Pemilu, DKPP)[39]. The Constitution and Law No. 15/2011 establish the mandate, roles and responsibilities of each of the EMBs.

The KPU is the independent EMB responsible for conducting national and regional elections. The KPU consists of seven commissioners, currently six men and one woman. Bawaslu is in charge of overseeing the implementation of elections. The DKPP is a national-level ethics council established by Law to review and decide upon complaints or reports of alleged violations of the code of ethics committed by members of the KPU and Bawaslu.

According to the Perludem[40], the idea of implementing e-voting in elections started since 2009, during a local government election.

Though Indonesia is yet to adopt e-voting system in its General Elections, the country has applied technologies in other aspects of electoral operations such as voter registration, accreditation and result transmission. In addition, e-voting has been adopted at sub national levels. **Nigeria shares similar demographic profile with Indonesia with the largest voting population in Africa**. Responses to issues raised by the application of technology and e-voting in particular therefore offer some useful lessons for the Nigerian experience.

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[36] How votes are counted in Indian elections? - https://www.prsindia.org/theprsblog/how-votes-are-counted-indian-elections

[37] https://www.worldometers.info/world-population/indonesia-population/

[38] https://www.electionguide.org/countries/id/102/

[39] IFES - Elections in Indonesia: 2019 Concurrent Presidential and Legislative Elections

[40] http://perludem.org/ - Association for Elections and Democracy - nonprofit organization.

3.4.2 Technology

The huge challenge of managing election in a vast terrain and large voting population makes the adoption of technology at every stage of the election process a convenient option in Indonesia.

For the 2019 elections, votes were cast on paper ballots, counted by hand and tabulated manually for official results. However, technology was employed in other processes. For example, there was a country-wide intranet system that connects KPU 531 offices, the KPU also uses a series of electronic tolls as the Vote Calculation Information System and Web-Based Election Vote Result Data Delivery. They are a collection of applications related to client/server programming-based election activities where client computers can perform and processes applications and databases on server computers, not only using the Local Area Network (LAN) but also in different areas over long distances (Wide Area Network/Internet).

Another important system used is the Voter Data Information System (SIDALIH) which was meant to operate the voter data application system. The Voter Data Information System Technical Guidance (SIDALIH) is a critical step towards updating and compiling the voter's data[41].

The KPU also adopted Situng, which stands for Vote Counting Information System and was developed to facilitate public access to information on the results of the 2019 Election. Tabulated results from all polling stations were used to provide informal and preliminary results. The results were displayed through the web in the Situng KPU, and it was a scanned copy of the results tally sheet, the data system recorded the results of voting in each polling station. The Situng 2019 has also a mobile version that is available to the Google Play.

Figure IX: Electronic Voting Machine deployed in Penggunaan, Indonesia

3.4.3 E-Voting Trials in Indonesia

The Indonesian Government has conducted many trials of the technology in village elections throughout the country, using an e-voting machine developed by BPPT[42]. Ever since it was

[41] https://kota-surakarta.kpu.go.id/

[42] BPPT Agency for the Assessment and Application of Technology (Badan Pengkajian dan Penerapan Teknologi)

first tried during a village-level election in Jembrana, Bali, in 2010, this e-voting machine has been equipped with a voter verifiable paper audit trail (VVPAT) printer.

The trial used a four-stage process for casting of votes:

1. The electronic resident identification card (e-KTP).
2. The voter enters the voting booth and inserts his/her token card into the e-voting machine and select the candidate photo on the display screen according to his/her respective choice.
3. VVPAT - After casting their vote, the voter receives an audit paper printed out by the EVM, to be inserted into a sealed audit paper box outside the voting booth, which serves as physical verification in case of a disputed election result. The audit paper box remains sealed and not to be accessed except when authorisation to do so is given.
4. The voter is required to dip a finger into an ink container as proof of having participated in the election.

3.4.4 Implementation of E-Voting at Sub National Levels in Indonesia

While the implementation of e-voting has been under debate in Indonesia's general elections, some sub national units have recorded success stories in its deployment. The Jembrana Regency in Bali Province, has since 2009 developed an e-voting system from a cafeteria order system. This system has been implemented for hamlets and villages' chief elections. The e-voting which was implemented under the Local Government of Jembrana Regency and supported by BPPT is regarded as a pilot in Indonesia and the approved-procedure for election of hamlet and villages' chief. Technology-Indonesia News Portal reported that the e-voting project has received the support of the people in Jembrana for its results and efficiency. It was reported that e-voting saved 60% of the election budget, compared to the paper-based system. Another achievement reported by Bali Post was the reduction in protest or conflict during e-voting-based elections. This demonstrates that well-developed and trusted e-voting systems can improve the democratic process, compared to Indonesian paper-based elections that sometimes cause conflicts and manipulated results.[43]

3.4.4 Legal framework in Indonesia

The legal hurdle for adoption of the e-voting was cleared when the Constitutional Court decided on Tuesday, March 30, 2010 that the use of e-voting is constitutional as long as it does not violate the principles of free and fair elections. The requirements to be fulfilled are namely (i) does not violate the principle of direct, public, free, confidential, honest, and fair, (ii) the area that implements the e-voting method is ready, in terms of technology, financing, human resources and software, the readiness of the community in the area concerned, and other necessary requirements.

3.4.5 Challenges to deployment of E-Voting in Indonesia

The KPU[44] identified some challenges regarding the implementation of the e-voting system in Indonesia:

- There is an unwelcoming attitude of political parties towards technology.

[43] Aprillia Hartami, Putu Wuri Handayani ; The Critical Success Factors of E-Voting Implementation in Indonesia Election: The Case of Jembrana Regency Election in https://scholar.ui.ac.id/en/publications/the-critical-success-factors-of-e-voting-implementation-in-indonesia

[44] "KPU IT Study: Utilization of IT in Voting, Counting, and Recapitulation of Votes" - 2015-2017

- The total cost of ownership (voter education, training, maintenance and storage) is greater than the total cost of the machine itself.
- There is a tendency that machines can only be used for less than three election cycles due to the evolution of existing technologies.
- Lack of public trust in e-voting machines that can be hacked, manipulated, and cannot maintain the confidentiality of votes, thereby reducing public confidence in the election results themselves.

An ongoing debate on the introduction and use of e-voting in Indonesia's elections has ensued post-2019 Elections. This is coming on the recorded death of some electoral officers, reportedly due to exhaustion after carrying our election related duties. According to the Government, the introduction of e-voting should be gradual, starting from the voting process, before being applied to other aspects of elections on a larger scale. [45]

During a press conference[46], a KPU Electoral Commissioner opined that Indonesia does not yet need an e-voting system. He added that, "Indonesia needs more of an electronic vote recapitulation(e-recap) than e-voting.

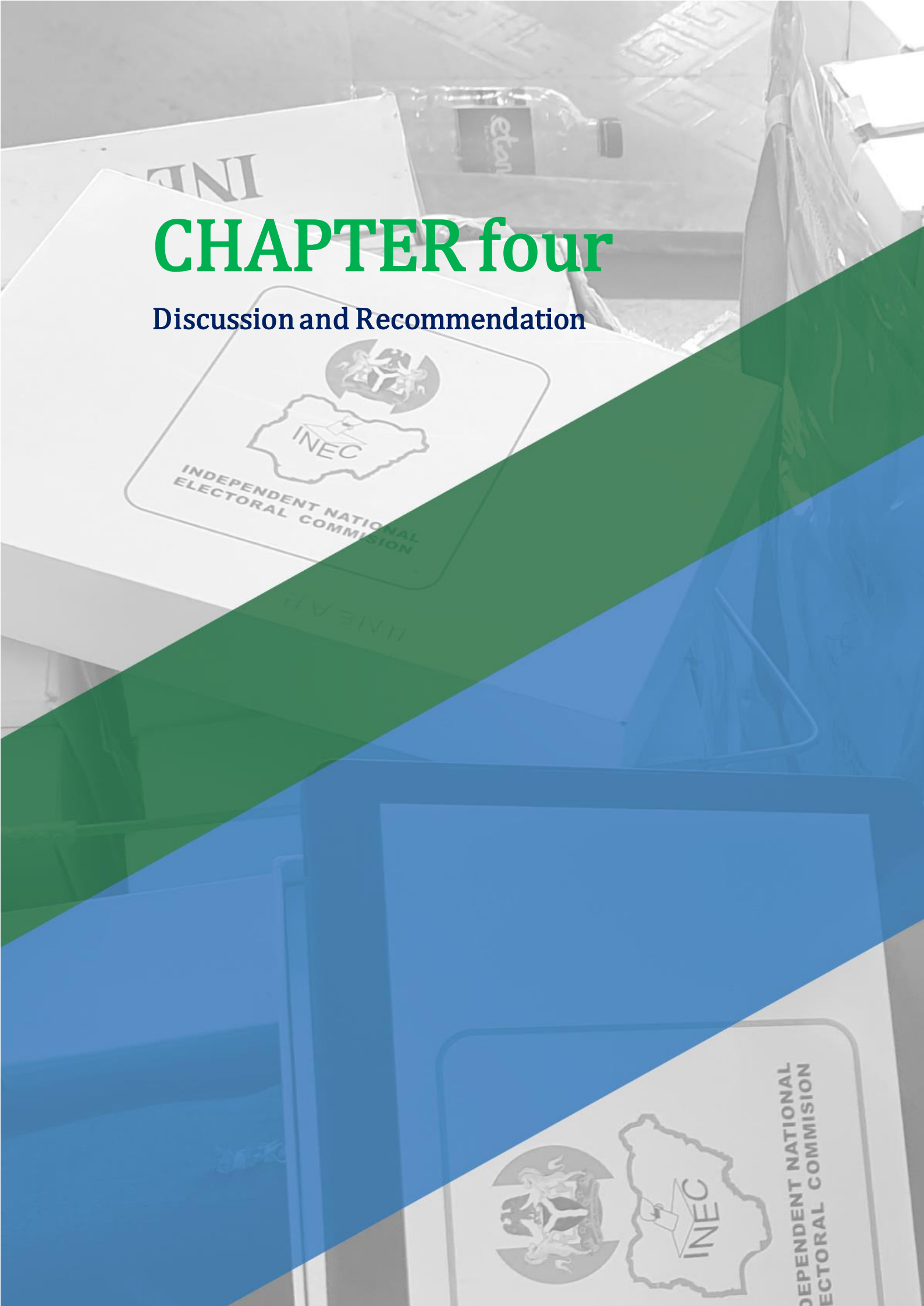
3.4.6 Lessons leant from the Indonesia experience

1. The conduct of many trials of e-voting technology by the Indonesia Government in village elections throughout the country underscores the significance of feasibility studies and pilot tests for the successful implementation of e-voting;
2. The use of the EVM with VVPAT in the various trials buttresses the need for an additional results verification tool that will further enhance transparency of the e-voting process.
3. The adoption of e-voting at sub national levels in Jembrana, Pandeglang and Banten regions even when it has not been adopted at general elections highlights the recommended phased implementation of e-voting.

[45] Elections in Indonesia Use E-voting, Wait 10 More Years (viva.co.id)
[46] KPU Assesses e-Voting System Not Needed - Medcom.id

CHAPTER four

Discussion and Recommendation



CHAPTER FOUR: DISCUSSION AND RECOMMENDATIONS

Implementing electronic voting is becoming an emerging trend, not only in terms of number of countries that have embraced it but even more so the number of those currently engaged in a conversation on why, when and how to deploy e-voting. In all these contexts, the issues to be addressed are basically the same. From this study, the challenges of implementing e-voting can be distilled into two broad categories: the technical and non-technical. Consequently, a comprehensive analysis of these factors can provide an insight into the challenges and opportunities that exists when considering implementation of an e-voting system.

Technical Issues to consider in implementing E-voting

1. The state of ICT infrastructure in the country and within the EMB;
2. Design and specifications of the e-voting system
3. Cyber security
4. Capacity/skill level for EMB staff and the citizens

Non- Technical Issues to consider in implementing E-voting

1. The level of consensus and acceptability among stakeholders, dynamic of intergroup relations and EMB trust level.
2. The legal framework
3. Budget impact and the cost of elections

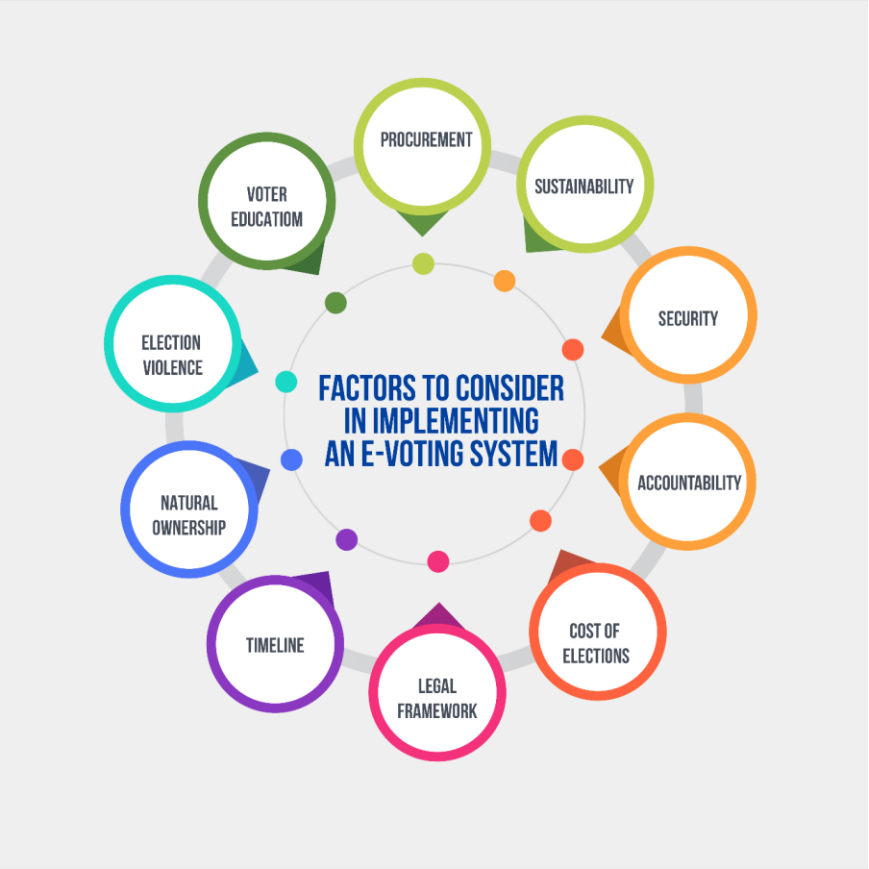


Figure XXI. Factors to consider in implementing an e-voting system

There has never been a one-size 'fit all' solution for these questions raised, as responses are dictated by the contextual realities of respective countries. These responses should of course be guided by the key principles of sustainability, appropriateness, cost effectiveness and transparency and mediated by the overarching needs to ensure the physical and cyber security of the e-voting process.

Having reviewed the state of play on e-voting within the Independent National Electoral Commission of Nigeria and the experiences of selected countries, it will be apt at this stage to examine how the basic questions on e-voting raised can be addressed within the context of the Nigeria's electoral environment and come up with broad recommendations which will ensure that the eventual implementation of e-voting contributes to an improvement of the electoral process.

According to ACE,[47] there are several types of e-voting systems and these include punch card voting systems, optical scan voting system, Direct Recording E-Voting System, Voter Verified Audit Trail and Internet or Remote Voting. However, these voting systems can be broadly classified into two namely **EVMs placed in selected locations** in which the voters cast their ballots in controlled environment and the **Remote voting through the internet**. These two broad categories require varying levels of infrastructural / network facilities and level of trust with the requirements tilting higher in relation to internet voting. It is therefore not surprising that most nations of the world including the selected case studies have deployed EVMs rather than internet voting. None of the countries deployed internet voting, notwithstanding the pending proposals towards remote voting in Brazil and India. The reasons for non-adoption of internet voting are obviously connected to the issues of trust by stakeholders and level of infrastructural development and these situations are also applicable to the Nigerian situation as INEC has made it clear that it will only deploy EVMs when permitted.

Q.1 What types of e-voting systems will be most sustainable and appropriate considering the current level of infrastructural development?

There are variations in the types of EVMs that have been deployed in the countries studied (Namibia, Brazil, India and Indonesia). With experiences and lessons learned over the years, there seems to be more preference for an EVM with an integrated Voter Verified Paper Audit Trail (VVPAT) as seen in the case of Namibia, India and Indonesia. This is largely connected with the issue of trust and transparency, two critical issues also faced in the Nigeria electoral process. The adoption of e-voting with VVPAT may therefore be more acceptable and inspire the required level of trust within the Nigerian context. This approach is consistent with indications from INEC as sources confirmed that although no decision on which technology or model to implement has been taken yet, stronger considerations will be given to a system that incorporates a Voter Verified Paper Audit Trail – VVPAT. Justifying the choice of VVPAT, the source further stated that in case of necessity for results audit, recount or legal requirement, the ballots can be manually counted or recounted, and the tally sheet verified in each of one the polling units.

Consequently, the deployment of an EVM with VVPAT within the context of Nigeria's electoral environment is more sustainable and appropriate for the following reasons:

I. **Literacy level**: Deployment of remote voting requires some degree of literacy among the voters. Nigerian adult literacy rate defined as the percentage of persons

[47] https://aceproject.org/ace-en/focus/e-voting/types-of-e-voting

aged 15 and above who can write a simple sentence in English was 62.02% in 2018.[48] This will impact the participation of a significant proportion of the population who may not also have access to devices to cast their votes either through mobiles or laptops.

II. **Broadband penetration/Internet connectivity**: Both the EVM and remote voting require internet bandwidth to function effectively. However, the demand is higher in respect of the latter. With a poor network coverage of data over 3G which stands at 74.2%,[49] unarguably higher in urban Centers and virtually non-existent in some of the rural communities, adoption of internet voting will certainly witness serious set-backs. However, in the case of EVMs, e-balloting can take place and the machines relocated to areas with better signals for transmission, as already the case with the transmission/uploading of the PU results sheets onto the INEC online results viewing portal.

III. **Infrastructural development:** The EVM option seems more appropriate in a situation of poor infrastructural development, particularly electricity supply. According to Statista, only about 62% of the population had access to electricity in 2019 with 91% urban and 30% rural variations.[50] An EVM machine can use batteries or be charged and operated within the voting period and therefore requires lesser source of energy which is epileptic in Nigeria.

IV. **Speed of the voting process:** Adopting the Indian EVM model which processes 5 and 150 persons per minute and per half hour respectively will improve voter experience and reduce the turn-around time of casting a ballot. With most PUs in Nigeria having an average of 500 voters, the Indian solution will see polling completed in less than two hours, which address overcrowding at PUs and timely conclusion of the voting process.

V. **Elimination of Rejected Votes:** One benefit of the e-voting system is the elimination of invalid votes occasioned by mistakes in balloting especially by less literate voters. For Nigeria's 2019 presidential election, a total of 1,289,607 out of 28,614,190 votes were rejected.[51] This will be eliminated in an e-voting system as the voter is expected to simply select the button that aligns to his/her choice.

VI. **Remote voting:** This balloting system, usually through online or mobile systems, also poses issues around the secrecy of the vote and the potential risk of influence of voters. The need to protect the secrecy of the vote and shun potential influence by external persons as a fundamental right of voters also calls for EVMs in dedicated voting Centers.

Recommendations

1. Given the level of infrastructural development in Nigeria and low level of trust in the electoral system, the most sustainable and appropriate e-voting choice is the EVM with an integrated VVPAT.

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[48] www.macrotrends.net/countries/NGA/nigeria/literacy-rate

[49] Quoted from Professor Mahmood Yakubu: Technological Innovations as Antidote to Election Rigging, presentation at Blueprint Newspaper Lecture and Award Ceremony, 3rd June 2021

[50] https://www.statista.com/statistics/1119633/share-of-households-without-electricity-access-in-nigeria-by-area/

[51] https://www.inecnigeria.org/wp-content/uploads/2019/10/2019-GE-PRESIDENTIAL-ELECTION-RESULTS.pdf

2. There is need to clarify the practical modus operandi regarding the ballot counting phase, and sensitise public on whether the collation process will include manual counting of the paper-trails before the transmission of the electronic result or not, also depending on the provisions of the new Law, once adopted. Party agents and the public actively attend this phase and should be adequately informed and educated on the process, to mitigate the risks of communication gaps.
3. The same need for clarity and ad hoc security measures is expected in case of e-transmission of results, especially where there is limited or unavailability of network coverage for a direct transmission from the PU level to a central database.
4. The Continuous engagement of state institutions that can provide support for the implementation of e-voting such as the National Communications Commission, National Information Technology Development Agency, Nigerian Communications Satellite (NigComSat) etc, should be sustained as they possess key infrastructures that can further enhance implementation of such a system.
5. There is need for INEC to present an assessment on its level of preparedness to conduct e-voting as well as an analysis of the budget implications of EVMs being considered and the sources of funding.
6. Technology is fast evolving, hence the need to track these changes through a dedicated research team.

Q.2 What steps can be taken to ensure the security of e-voting system and prevent manipulation or hacking?

The security of the e-voting process is critical for the credibility and integrity of the electoral process. Despite the numerous benefits of EVMs, lessons from international experiences as well as analysts have identified various security risks associated with e-voting. Abdul Hakeem Ajijola, a Nigerian Cyber Security Expert, identified 5 categories of Cyber space threats namely physical attacks on the system, authentication and privilege attacks, denial of service which includes loss of power, malicious attacks and weaponisation of fake news and hate speech.[52] Given the current advancement in technology, there is always the fear that a programme can be manipulated to allow storage and printing of a form or document different from the one appearing on screen. The security risks are not just limited to the balloting alone but also electronic transmission of results.

Underscoring the risks of security in e-voting, Hari K. Prasad, Rop Gonggrijp, and Alex Halderman, the security specialists conclude that "despite elaborate safeguards, India's EVMs are vulnerable to serious attacks. Dishonest insiders or other criminals with physical access to the machines can insert malicious hardware that can steal votes for the lifetime of the machines. Attackers with physical access between voting and counting can learn which candidate each voter selected, also possessing the ability to arbitrarily change vote totals".[53] Integrity of the e-voting process implies preventing unauthorised modification of users' information and putting in place strong mechanism to prevent changes to data (votes cast) including by insiders.

The Brazilian experience shows that there are both technical and non-technical measures that could mitigate the risks of accessing the e-voting systems. These include disconnecting the

[52] Abdulhakeem Ajijola: Digital Security Considerations for Development, Presentation at the 1st Computer Networks, Infrastructure Management and Security (CoNIMS) Conference and Workshop, Arthur Mbanefo Digital Research Centre, University of Lagos, 24th October 2018.

[53] Security Analysis of India's Electronic Voting Machines - Hari K. Prasad, J. Alex Halderman, and et al - https://indiaevm.org/evm_tr2010-jul29.pdf

devices from the internet during voting periods, opening the software to public monitoring and testing, or conducting pre-election tests before starting the voting operations, as in India.

The proposed deployment by INEC should put in place strict security measures for the balloting and transmission of results. For example, the three-layer ballot of the VVPAT will ensure that recorded votes are as cast by the voters. For the transmission of results, the EVMs should transfer the data to a main server only after printing of the results (hard copy). If there is no internet connection, the EVM should be moved to a place where the internet is available. For secure data transmission, INEC should implement strong security protocols, data encryption and security data tunnels, most probably establishing a VPN (Virtual Private Network).

Recommendations:

7. Consistent effort should be invested in ensuring the political parties and their representatives, as well as the general public are familiar with the methodology and processes of the e-voting to engender understanding and bolster confidence. INEC may wish to consider the periodic conduct of the Public Service audit/Trust along the line of the Brazilian model as one of the security strategies for the e-voting. Consequently, a robust inspection system, that will involve more stakeholders including representatives of political parties, CSOs and other stakeholders should be put in place at all stages of the e-voting process, "opening the books", allowing for external stakeholders to look at the software deployed, and test the systems ahead of elections.
8. INEC may wish to consider the institution of multi-layer level of security which will serve as checks at several points with an alarm system in case of attempted infiltration.
9. To serve as deterrent for hackers, the National Assembly should stipulate severe penalties for cybercrimes related to elections. This should be specifically included in the Electoral Act and the scope should naturally go beyond provisions of the 2015 Cyber Crimes (Prohibition and Prevention etc.) Act.
10. In developing the e-voting, INEC should adopt the principles of defensive approach, segregation of duties (with separate and distinct authorisation levels) and software independence.
11. Post-election audit systems should be put in place, as a systematic check for the validity and integrity of its electronic results, as it's progressively being the case in other contexts where e-voting has been implemented. Risk-Limiting Audits (RLAs) are one of these methods that are becoming popular whit EVMs using VVPAT[54].

Q.3 What steps can be taken to ensure accountability and transparency of the e-voting process?

Given the level of distrust and mutual suspicion on Nigeria's electoral process, trust-building through effective stakeholder engagements will expectedly be very critical in the implementation of e-voting. According to IDEA, on top of the E-Voting Pyramid of Trust, is a credible electoral process that enjoys a high level of public trust and confidence. [55] Buttressing the point further, McGaley et al declared " A Voting System is as good as the public believes it to be".[56] Unlike in the conventional manual voting through which the processes can be

[54] Risk-Limiting Audits (risklimitingaudits.org)

[55] IDEA: Introducing Electronic Voting: Essential Considerations, Policy Paper, December 2011

[56] McGaley M. and Gabsson J.P: Electronic Voting: A Safety Critical System, National University of Ireland, Maynooth, 2003.

supervised by all parties involved, e-voting will move some electoral activities from public glare to virtual offices and servers.

This implies putting in place a series of measures not only before the election but also in its aftermath, as it's increasingly been the case in many countries where e-voting has taken place. Electoral Commissions that deploy e-voting machines resort to post election audits to check the validity of the results and ensure that the integrity of the result remains intact, contributing to increase the level of voter confidence. Risk limiting audits are some of the statistical techniques developed and implemented for this purpose. They compare the electronic result with the paper trails based on statistical sampling methodologies, allowing to draw conclusions based on an agreed level of statistical confidence.

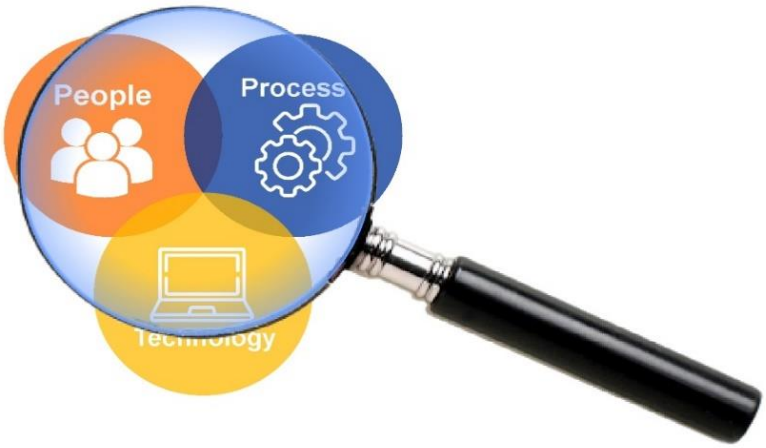


Figure XII:: PPT for enhancing Transparency of E-Voting System

Q.4 *What will be the implication of the adoption of e-voting on the cost of election?*

Cost has always been a major consideration in the adoption of e-voting and the basic questions is how will the adoption of e-voting impact on the cost of elections especially in view of the high cost of the EVMs if they have to be imported as it is most likely the case with Nigeria. INEC needs to procure at least about 200,000 units of EVMs. While the actual cost depends on specifications of the system, however, given previous experiences of importing voting equipment from China (the Smart Card Readers of INEC and the EVM of Kaduna State),with an average price of $1,000 - $1,500 of EVM in China[57], it is safe to assume a unit price of $1200 which translates to about $240 million dollars or about N120 billion excluding the cost of other accessories and software acquisition. If these are added to the cost of payment of ad hoc staff (though should be lesser than previous number), logistics and security, trainings for core and adhoc staff, voter education and sensitisation campaigns among others, the cost of implementing e-voting may probably not be lesser than the N189 billion spent in the 2019 election. Proponents of e-voting have posited that though the initial cost may be high, subsequent costs will be lower as the EVMs will not be procured again for future elections. However, given the changing nature of technologies, it is doubtful that the EVMs could be used in more than three election cycles as the experiences of countries reviewed have shown migration to higher models especially in Brazil where 7 models of EVMs have been deployed between 1996 and 2014. Experts estimate that a reasonable lifespan for electronic voting machines (which are computers, running mainly on laptop technology

[57] https://www.alibaba.com/countrysearch/CN/electronic-voting-system.html

developed in the 1990s) is in the 10- to 15-year range.[58] Using aging voting equipment on Election Day increases the likelihood of breakdowns, leading to delay in voting and preventing many people from casting their votes. Equally troubling is that aging machines can be difficult to maintain because they are no longer manufactured. As these machines get older, parts become scarcer. Finally, there are security risks. Many older voting systems rely on outdated operating systems, which are no longer supported because they do not receive regular security updates and therefore vulnerable to new methods of attack.

Indeed, concerned about the high cost of acquisition of EVMs and its constant modifications, suggestions have been made that the option of leasing the equipment will be better than outright procurement which will become almost obsolete for the next electoral cycle. This is seen as a possible way to reduce the cost of maintenance and replacement. The challenge with this leasing option is that EVMs are usually customised and given the large quantity required, it is impossible to find enough quantities for leasing. Besides, no other agency within the country except an EMB will acquire the EVMs in such a large quantity and sourcing the lease outside the country will be more difficult for logistics reasons and issue of national sovereignty.

However, sources within INEC have indicated that the option of a low-cost solution is understandably being considered. This option may not be out of place in view of the low cost of India's EVMs which cost $116 and $211 for the M2 and M3 EVMs respectively. However, it should be noted that the India EVMs were locally manufactured by the Bharat Technologies. It is not certain that Nigeria could acquire the capacity for the local manufacture of the EVMs in the nearest future.

Another argument that has been posited is that the adoption of e-voting will eliminate huge cost elements in Nigeria's election. According to INEC's election project plan, the 2019 general elections budget proposal of about N189 billion is broken down into four components: the Election Operational Cost which is estimated at N134.4 billion; the Election Technology Cost, estimated at N27.5 billion naira while the third and fourth components of N22.6 billion and N4.6 billion are for Election Administrative Cost, and contingency, respectively. Areas of potential savings are the following:

I. INEC printed 421.7 million ballot papers for the six scheduled 2019 General Elections and 13.6 million leaves of result forms for presidential election alone. These were in addition to equally huge quantities of non-sensitive materials. The casting of election through an EVM will eliminate the cost of these printings or reduce it to the barest minimum like in the printing of limited slips if the VVPAT is adopted;

II. For the 2019 General Election, INEC engaged a total of 814,453 ad hoc staff to man the almost 120,000 polling units.[59] Each of the PU was manned by an average of 4 ad hoc staff and with layers of supervisory officers. While some level of manpower will still be required, given the reduction in the voting process flow, probably two persons will be enough to manage the PU making it possible for less than 50% of the ad hoc staff to perform the same task.

III. Logistics: Elections require movement of personnel and materials to every PU and within a short time span which makes the cost more expensive. With the reduction of

[58] https://www.rawstory.com/2016/04/aging-voting-machines-threaten-election-integrity/

[59] https://www.premiumtimesng.com/features-and-interviews/312927-the-key-figures-that-matter-in-nigerias-2019-general-elections.html

the printing of election materials and lesser personnel, the huge funds spent on air, land and sea transportation will be drastically reduced.

IV. Simultaneous election: A cost saving element of e-voting is the prospect of holding elections within a shorter period. All federal, state and local government elections can be conducted in a day- with each voter casting his votes between 50 to 90 seconds for all executive and legislative elections, saving time and cost.

Recommendations:

12. In the absence of apparent domestic capacity to manufacture EVMs, the design of the equipment should leverage on in-house expertise like in the case of the Smart Card Readers with specifications tailored to peculiar needs and functionality;
13. In order to reduce the huge capital investment on the procurement of EVMs and other accessories, the option of local manufacture should be vigorously pursued through relevant national institutions and private sector players;
14. The option of leveraging on facilities and structures of other national institutions such as servers and networks should be explored in order to improve the potential for success as well as reduce cost;
15. To reduce the cost of election in the long run and justify the huge initial investment, the technology of the e-voting should be re-usable, even if needed to be adjusted or reconfigured, for at least four electoral cycles;
16. Credible and regularly-updated national identity systems are important for the election process. This will contribute significantly to reducing election-related costs, especially the cost of biometric voter registration.

Q.5 Is there adequate legal framework to accommodate e-voting?

The adoption of e-voting raises a legal issue as there is need for clear endorsement by the relevant legislative instruments such as the Constitution, Electoral Act and INEC Guidelines and Regulations. The endorsement should detail procedures to be followed at each stage of implementation and remove ambiguities that can constitute legal landmines. Experiences of countries reviewed showed that putting in place relevant laws are preliminary steps to be taken in the implementation of e-voting. While there are legal provisions covering the use of the Smart Card Readers and biometric accreditation, INEC has indicated that the only hurdle to be crossed on the implementation of e-voting is the enactment of relevant legal provisions. It has further indicated that unless this is done before the end of 2021, it will be impossible to deploy e-voting for the 2023 elections.

Crossing the legal hurdle on the implementation of e-voting may not be a simple task given the delay that has been expressed over the passage of the 2021 Electoral Amendment Act and the feelers that some critical proposals, particularly the electronic transmission of results, are still under discussion in the current bill under consideration by the National Assembly. Questions around the clarity of the legal provisions, especially around the counting and transmission phases, as well as around the interpretation of the level of leeway offered to INEC in implementing e-voting across the country may also arise. This, if not well managed may lead to contestation and legal challenges. It is also yet to be ascertained the extent to which all clauses in the proposals on e-voting will eventually secure presidential assent.

Even if e-voting implementation secures all legislative endorsement and presidential assent, it's passage may not be the end of legal issues in relation to the adoption of this system. Based on experiences from other countries and the past controversies over the introduction of the Smart Card Readers, it is to be expected that some political parties upon losing an election

may challenge one or more aspects of the process, seeking alternative interpretations. For example, the Electoral Commission of Namibia procured 15,200 EVM components for the 2020 election. However, the Supreme Court declared in 2020 that the use of EVMs without a verifiable paper trail is unconstitutional. In a press interview, the commission's chief electoral officer, Theo Mujoro, said the ECN will not use EVMs without verifiable paper trail technology (VVPAT), and it would require huge amounts of money to procure this technology, and time to prepare the devices before EVMs are used in any future elections. As a result, the machines were subsequently removed from the electoral process and replaced with manual ballot papers.[60]

One critical issue that needs to be addressed in amending the legal framework to accommodate e-voting is the need to have provisions that will ensure quick delivery of electoral justice, especially in relation to cybercrimes. The introduction of an e-voting system will definitely attract a new set of electoral offences, for which corresponding mechanisms for detection, investigation, prosecution and penalties will be required. It is also important that cyber electoral offences are swiftly addressed in the light of observation by Barry Greene that "Cyber criminals operate at the speed of light while law enforcement moves at the speed of the law"[61]

Recommendations:

17. The National Assembly should expedite action in the passage of the laws that will allow e-voting;
18. Effort should be made to ensure that e-voting laws are devoid of ambiguity and comprehensive enough to avoid lingering litigations after passage and election including the mandatory pre-audit of the technology used for the e-operations (as it was the case in Catalunya) and post-audit of the results (risk limiting audits (RLA);

Q.6 What is the appropriate timeline for the implementation of e-voting?

INEC and many stakeholders have expressed the wish that an e-voting system would be implemented in the 2023 general elections. Timing is a critical success factor for the implementation of e-voting. There are two dimensions to the time-related issues on e-voting. The first aspect is that time must be sufficient enough for allow for adequate preparations, especially in terms of feasibility studies, procurement of hardware and software as well as stakeholders engagement. Procurement processes of such magnitudes require considerable amount of time, especially if the equipment will be sourced from outside the country. The second aspect relates to the spacing of the implementation. The basic question is whether the implementation will be whole or in phases, starting with pilot tests which will be progressively increased until the whole elections can be covered at once. This is drawing from the experience of Indonesia, which is yet to implement e-voting on a national scale despite the fact that some of its regions including Pandeglang, Banten and Jembrana have adopted e-voting as far back as 2014. Stakeholders interviewed, drew attention to the risks of the whole scale adoption of e-voting, preferring instead a phased introduction starting with Anambra Governorship election in 2021 and the Ekiti and Osun Governorship elections in 2022, which will then provide adequate learning experience for a full-scale implementation in 2023.

[60] ECN undecided on discarded EVMs – The Namibian- 2020-09-23 - https://www.namibian.com.na/204805/archive-read/ECN-undecided-on-discarded-EVMs

[61] Quoted from Abdul Hakeem Ajijola: Civil Liberties, Election and Critical Infrastructure Protection, Ford Foundation Learning Session, 12-13 September 2018.

Recommendations:

19. To facilitate a learning process in the implementation of the e-voting, INEC should adopt a phased implementation of the e-voting starting with supplementary elections before full deployment in the 2023 general elections, provided the legal framework is adopted.
20. Consistent with international best practices, a longer preparatory period for the full deployment of the e-voting should be respected. In most cases, the timeline for proper implementation of technologies including e-voting is likely to be measured in years rather than months, even for pilots.[62]

Q.7 How can national ownership be promoted in the implementation of e-voting?

The issue of national ownership of the e-voting system is crucial for reasons of sovereignty. Notwithstanding the interdependence of nations, many nations prefer to have considerable national control on sensitive issues such as election. While some countries through their relevant national institutions have been able to develop the capacity to manufacture relevant hardware for e-voting such as Brazil and India, others such as Namibia, rely on foreign production with the EVMs imported from India. For Nigeria, given previous record and the current level of manufacturing capacity, it is most likely that the hardware will be imported. For the 2011 elections, the Smart Card Readers though designed through in-house expertise were imported from China. However, the software was reportedly developed within the Commission. This is also consistent with the experience of other countries.

It should be noted that reliance on foreign supply of election materials is not strange in Nigeria as the bulk of ballot papers are printed outside the country. But what makes the importation of e-voting risky is the high-tech nature of the equipment which may be subject to remote control, unlike the ballot papers that are not subject to any control when delivered.

Given the rising cost of election, the most sustainable route for e-voting system is to begin the production of the e-voting machines within the country through collaboration with relevant national institutions and the private sector. There are institutions such as Electronic Development Institute (ELDI) in Awka, a parastatal of the Federal Ministry of Science and Technology who have expressed capacity and readiness to design wholly owned Nigerian e-voting machines. The institute was reported to have developed a solar powered electronic voting machine with cloud-based storage which would collate election results.[63]

Even if heavy vendor reliance is unavoidable at the initial stage, the EMB should possess or build the capacity to retain overall control of the e-voting system.

Q.8 Will the implementation of an e-voting system curtail the negative practice of election violence and vote buying in the electoral process?

A strong point in advocating for implementation of e-voting is its capacity to mitigate the rising incidence of election violence and vote buying in Nigeria's electoral process. The reduction of human interference in the process will reduce common triggers of violence such as ballot box snatching, disruption of the voting process, intimidation of voters and manipulation of results. In respect to vote buying, it is also reckoned that the secrecy of the ballot through e-voting will discourage display of voters' choices.

[62] https://www.ndi.org/e-voting-guide/timeframe
[63] https://techpoint.ng/2017/01/31/nigeria-solar-powered-electronic-voting-machine-has-been-unveiled/

The analysis of the case studies doesn't bring any clear evidence on the impact of the introduction of e-voting on election violence, except the report from Bali province that there was reduction in protest or conflict during e-voting-based elections.

The concept of e-voting as a panacea for violence and vote buying is only tenable through the adoption of remote or internet voting in which voters may not need to gather at any voting Center but rather exercise their franchise from the comfort of their respective locations, although this also poses another challenge to secrecy of the vote with potential for influence by peers and relatives. As pointed out earlier, given the level Nigeria's development, like most countries of the world, the adoption of internet voting is not appropriate. The option being contemplated by INEC, and which has been the favorite option is the EVM with integrated VVPAT in which there will be three documented copies of the ballot.

In relation to election violence, the EVM with the paper copies may become the electronic ballot box which can as well be snatched. Depending on the methods of result transmission adopted, the snatching of the ballot boxes might impact on declaration of election results. If the result is automatically transmitted, the snatching of the ballot box may be of little consequence. In any case, election can still be disrupted by thugs in perceived strongholds of opposition parties. The second option of transmitting results in which the EVM will not be connected to the network either due to limited coverage, lack of internet access or to prevent interference is even more prone to trigger conflicts or violence. In such cases, the EVM will be taken to a location with better signals for votes counting before transmission. The EVM can be snatched or destroyed at this last stage before collation.

Some of ECES interlocutors expressed pessimism on the capacity of e-voting to stem the rising tides of election violence and vote buying, which are inspired and sustained by pre-existing conditions of fierce political competition and 'winning at all cost' mindset. Indeed, some interlocutors have alluded to the fact that e-voting may trigger violence as aggrieved parties who feel they may be shortchanged will resort to violence ahead of the election.

Recommendations:

21. Given the variations in the mode of voting, there is need for the security agencies to put in place an e-voting security architecture that will among others handle the physical security of EVMs as well as related facilities and installations.
22. In view of the fact that e-voting will not neutralise all persisting security challenges such as disruption of voting processes, intimidation of voters and attack on personnel, the existing security arrangements cannot be scaled down but rather strengthened for the peaceful and successful conduct of elections.
23. Implementation of e-voting will lead to higher security concerns at the PUs, where more pressure may be exerted on voters, as riggers will see this as the only point to potentially influence results; A similar scenario may play out at the collation Centers and other higher levels of electoral operations, especially in the constituencies where e-transmission is not possible in real-time at the PU level. There will therefore be the need to beef up security arrangements at the collation Centers, LGA and state offices as well.

Q.9 What level of voter education / stakeholder engagement will be required for the effective implementation of e-voting?

The success or otherwise of e-voting depends on the effectiveness of voter education and stakeholder engagements geared towards providing broad based support and participation in the electoral process. The implementation of e-voting requires new set of voter education messages that will simplify voting procedures and dispel possible misconception on such issues like identity theft and exposure of voters' preferences. Such voter education must simplify the voting procedures and educate electorates on the security measures in place to protect the integrity of the voting process. The voter education should also cover unlearning the manual voting system and learning e-voting procedures with a clear emphasis on what it will and will not do.

This becomes important in view of the need to manage public expectations on e-voting, some of which are not consistent with the Commission's plan or current realities. One of the ECES interlocutors informed that among the youth population, e-voting means the ability to vote either through a computer or mobile device. Indeed, the tone of the current national discourse tends to give the impression that e-voting is synonymous with remote voting. This needs to be clarified.

Engagement of stakeholders in the implementation of e-voting is a critical success factor in the implementation of e-voting. Given the diverse and often contradictory positions of stakeholders on critical issues in relation to election, forging a common perspective on e-voting could be a herculean task. Divergent positions are becoming obvious, not only across political parties but even geo-political lines. The incumbent / opposition parties' dichotomy is becoming discernible in the national conversation on e-voting. With an electoral fortune boosted by power of incumbency, the incumbent party is often perceived by the opposition as being hesitant towards e-voting. In the aftermath of its loss in the 2019 general elections and defeat in Kogi and Bayelsa governorship elections, the PDP was reported to have called for e-voting and threatened to boycott future elections if this is not done.[64]

Recommendations:

24. Broader and continuous stakeholder engagements involving the National Assembly, political parties, CSOs, media, marginalised groups, security agencies, and other electoral stakeholders to strengthen commitment and acceptance of e-voting, neutralising misconceptions and resistance. This engagement should be initiated at the earliest stages, and include efforts of transparency on the technological aspects as well as on the non-technical ones.
25. Design and implementation of an intensive voter education on the implementation of e-voting with the following essential elements:
    a. Simplification of voting procedures to facilitate public understanding of the voting procedures;
    b. To allay and dispel the fear of intimidation that may arise through compromise of secret ballot;
    c. Inclusivity of the e-voting process for the participation of persons living with disabilities.

Q.10 What are the procurement procedures to be adopted that will ensure transparency and guarantee value for money?

[64] https://www.rockcityfmradio.com/pdp-calls-for-e-voting-or-will-boycott-future-polls/

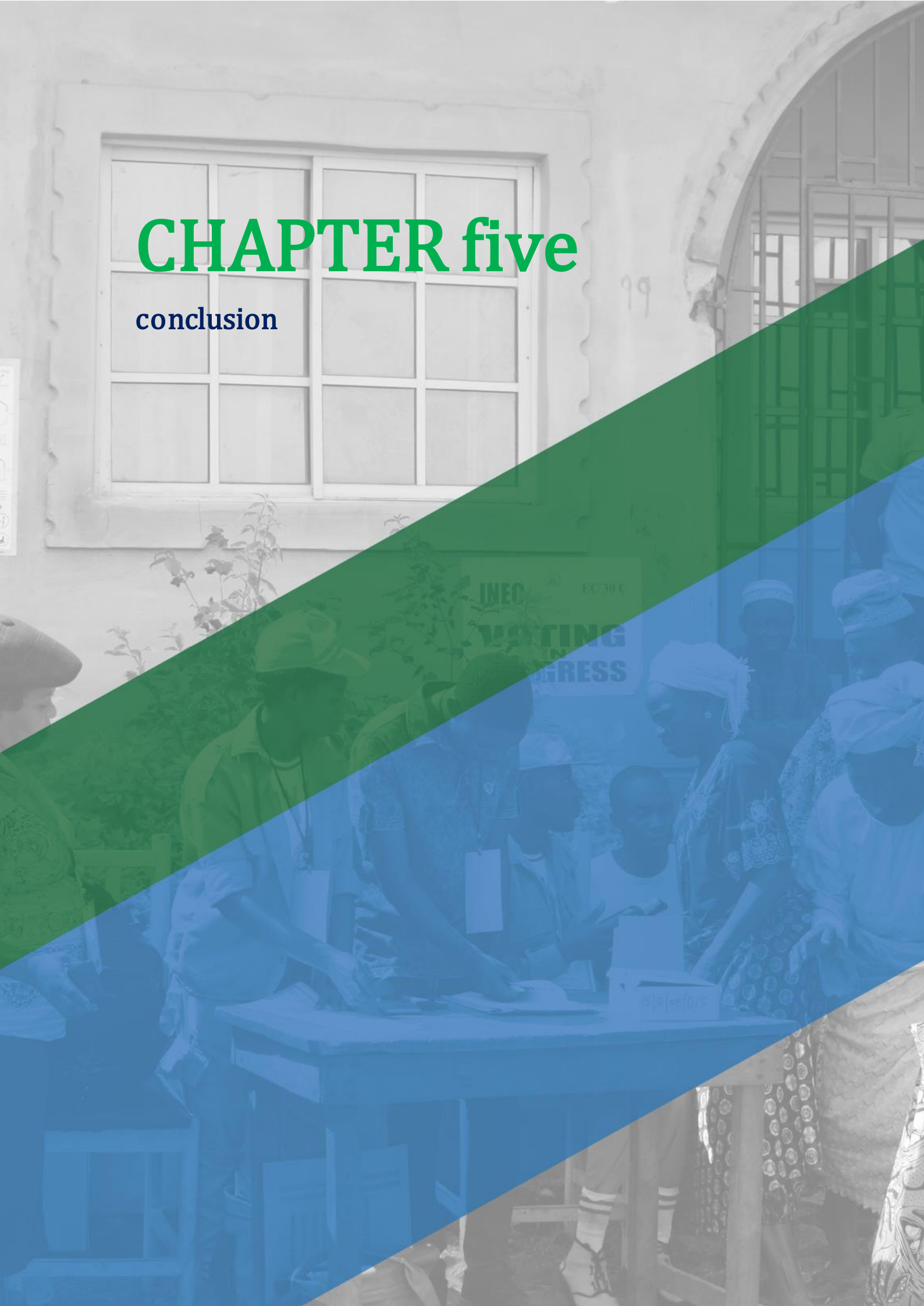
Procuring e-voting machines for elections is another critical success factor with profound implications for the efficiency and credibility of the electoral process. There is certainly no way the procurement of about 200,000 EVMs could be done on the shelf. Orders have to be made for certain specifications and which can only be delivered over a long time. Working out a procurement plan must take this critical element into account.

It is therefore necessary for procurement to be carried out effectively and transparently. Hitches and shortages in procurement and distribution of materials can critically impact the execution and outcome of an election. There should be adequate planning, integrated into the programming phase of election management exercises and technical assistance. Planning should include the development of a procurement strategy and risk management analysis; analysis of supply chain constraints; cost analysis; and assessment of implementing partners' capacities.

It is also important to carry stakeholders along in the procurement process, bringing them up to speed on the types of equipment to be procured, with a view to ascertain their expectations on specifications being considered, in terms of security, transparency and delivery of the process.

Recommendations:

26. Procurement and deployment of election-related technology must be timely, transparent and inclusive to ensure buy–in from all stakeholders, ensure value for money and allow for testing and inspection**.**
27. The issue of knowledge transfer from experts on operating the EVMs after procurement of the equipment should be prioritised.
28. The electoral cycle should be factored in when procuring technology to allow sufficient time to conclude this aspect.



CHAPTER five

conclusion

CHAPTER FIVE: CONCLUSION

The drive towards implementation of e-voting in Nigeria's electoral process is gaining momentum, with expressed institutional commitment from INEC and manifested broad acceptance by a large segment of electoral stakeholders who see e-voting as the 'silver bullet' to enduring flaws that have consistently undermined the credibility and integrity of Nigeria's elections. There is also a broad consensus on a phased implementation of the e-voting among stakeholders in order to give the Commission adequate time to test the new system before deployment for the 2023 General Elections. However, there are divergent views on how best e-voting should be implemented with some stakeholders pushing for an e-voting system with little or no human or physical activity and tantamount to remote or internet voting.

The achievements of INEC in deploying technology in the electronic register of voters, voter registration, biometric registration and more recently, a result viewing portal and an online pre-registration portal for voter enrolment serve as an inspiration and positive indication for the Commission's potential introduction of e-voting.

However, in the absence of an enabling legal framework at the time of writing, Nigeria's transformation from an era of manual voting system to e-voting remains a dream yet to be realised. In addition, the peculiar nature of Nigeria's electoral environment marked by stiff competition, weak infrastructural development, dynamics of inter group competition, violence, paucity of fund, among others pose some tough challenges to the e-voting implementation plan.

Ways in which these questions are addressed will be very critical in determining whether indeed e-voting is the 'silver bullet' to Nigeria's electoral challenges or another in the series of innovations which have not yielded desired results. There are already signs that whatever solutions or e-voting system is adopted, there will be challenges. There are challenges of mobilising resources for procurement of e-voting hardware within the context of rising concerns on the cost of elections; risks of operational challenges related to the uneven communication infrastructure networks in the country; potential challenges to the legal framework if it leaves room for interpretation; threat of cyber security; instilling public trust in the e-voting process and coming up with appropriate timelines for implementation. There is also the significant fact that the type of e-voting system being proposed by INEC may not eliminate or even reduce the lingering challenges of election violence and vote buying because of the substantial human activities that will accompany the process.

Whichever outcome, ongoing national conversations on implementation of the e-voting takes, it is important to bear in mind that technology even at its best, does not provide a full end-to-end solution to electoral challenges as human interface with the system needs to be carefully handled. For countries that have adopted e-voting, there are still ongoing debates on the desirability of the e-voting process, with some reverse steps taken, resulting in either suspension or banning of e-voting. This has been the experience in countries with advanced infrastructures and stable political system such as Germany and Netherland. It must be realised that there are certain negative aspects of election such as disruption of the voting process, attack on security personnel and materials, vote buying and other negative practices that are not preventable by technological tools. E-voting and indeed other technological driven electoral systems must be able to manage and create the necessary synergy between the people, Process and Technology (PPT).

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Annex 2: ECONEC – ECF/SADC joint declaration on the use of technology inelections in the ECOWAS and SADC regions

OPPORTUNITIES AND CHALLENGES IN THE USE OF TECHNOLOGY IN ELECTIONS

ECONEC – ECF/SADC JOINT DECLARATION ON THE USE OF TECHNOLOGY IN ELECTIONS IN THE ECOWAS AND SADC REGIONS

The Independent National Electoral Commission (INEC) and the ECOWAS Network of Electoral Commissions (ECONEC-RESAO) in collaboration with the Electoral Commissions Forum of Southern Africa Development Countries (ECF/SADC) with the support of the European Centre for Electoral Support (ECES), managers of the Component 1 of European Union Support for Democratic Governance in Nigeria (EU-SDGN) held an International Conference, *on Opportunities and Challenges in the Use of Technology in Elections: Experiences from West and Southern Africa* at the Transcorp Hilton Hotel, Abuja, Nigeria from 9 to 11 April 2018.

The Conference reviewed, assessed and shared experiences on the basis of lessons learnt by Election Management Bodies (EMBs) in the ECOWAS and SADC countries and others on the introduction, trend, impact and potentials of the use of election technologies in the last three decades.

The Conference was attended by Chairpersons, Vice Chairpersons and Members of Election Management Bodies of the ECOWAS and SADC countries, Representatives of the Ministries and Agencies in charge of elections in some ECOWAS member states, as well as the Chairman of the Election Commission of Jordan and of the Independent Electoral and Boundary Commission of Kenya, who gave the Keynote Address. Also in attendance were the EU Ambassador to Nigeria and ECOWAS, members of the Diplomatic Corps in Nigeria and representatives of the ECOWAS and African Union Commission. Other participants include election and election technology experts, staff of INEC, ECONEC and ECF-SADC Secretariat, leaders and representatives of political parties and Civil Society Organisations, the media, EU-SDGN project implementing partners and development partners, including the Open Society Initiative for West Africa (OSIWA), the German Agency for International Cooperation (GIZ), International Foundation for Electoral Systems (IFES) and other stakeholders.

OPPORTUNITIES AND CHALLENGES IN THE USE OF TECHNOLOGY IN ELECTIONS

Participants at the Conference:

ACKNOWLEDGE the benefits of the use of technology to boost public confidence in the electoral process and for the protection of the sanctity and integrity of the ballot in ensuring that leaders in the ECOWAS and ECF-SADC regions now obtain their mandate and legitimacy solely through the ballot box, based on the rule of law and will of the people;

SALUTE the courage, determination and resilience of citizens and managers of elections in the ECOWAS and SADC regions in promoting and defending democracy through the deployment of ICT in elections to enhance the credibility, integrity and transparency of the electoral process to the extent that power now alternates between the ruling and opposition parties through largely peaceful electoral and democratic transition processes;

RECOGNISE the role of international and regional organisations, development partners, governments and state institutions, political parties, traditional and religious leaders, Civil Society Organisations, the Media and the citizenry in facilitating and supporting the use of technology in the conduct of credible electoral processes and peaceful transitions, thereby deepening democracy and good governance and promoting national and regional peace, stability and development in the ECOWAS and SADC regions;

NOTE the progressive adherence of ECOWAS and ECF-SADC members States to the various international, continental and regional protocols and principles, including the African Charter on Democracy, Elections and Governance, the ECOWAS Supplementary Protocol on Democracy and Good Governance and the SADC Principles and Guidelines Governing Democratic Elections, furthering the enhancement of electoral processes and the deepening of democratic culture in both regions;

TOOK a critical and holistic look at the adoption, deployment and use of technology in elections over the last three decades. Having reviewed the impact of such deployment and drawing appropriate lessons with a view to strengthening the sanctity, integrity and credibility of current and future elections and consolidating democracy and good governance in the ECOWAS and ECF-SADC regions, **hereby declare as follows:**

1. EMBs of ECONEC and ECF-SADC regions bear the burden discharging the sacred national duty of organising and conducting free, fair, credible and transparent elections, bearing in mind that the outcome of a well conducted and generally acceptable election is the basis of good governance, peace, stability and development. On the other hand, a badly conducted election

with disputed outcome is always a trigger for conflict, sometimes resulting in civil war with negative consequences, not only on the affected state, but on neighbouring states in particular and the region and the continent in general.

2. EMBs of ECONEC and ECF-SADC regions are aware that sustaining the usage of technology in elections is an expensive undertaking. This requires the mobilisation of adequate resources, which sometimes may be beyond the capacity of the state to bear as a sovereign responsibility. Therefore, the Private Sector, which requires a stable and peaceful political and socio-economic environment to operate and thrive, should contribute to meeting the cost of elections;

3. EMBs of ECONEC and ECF-SADC regions are willing to take advantage of the opportunities offered by technological innovations to improve the credibility of the electoral processes and to enhance the sanctity of the ballot and integrity of electoral outcomes. In doing so, EMBs should view the application of technological innovations in the electoral process as a facilitator, rather than a "magic bullet" for the delivery of good and credible elections by utilising simple, appropriate, cost-effective and sustainable technologies. The deployment of such technological equipment and applications should be secured in law, protected against intrusion and accompanied by appropriate training of electoral officials and effective civic and voter education to engender trust, confidence and ownership by all stakeholders;
4. EMBs of ECONEC and ECF-SADC regions are conscious of the numerous challenges associated with the adoption, deployment and usage of electoral technology, including the deficit of infrastructure and expertise, cost, choice and effectiveness of technology, as well as the twin issues of communication platforms and the security of sensitive election data in a world characterised by cyber warfare and election interference through the use of technology on a global scale by State and non-State actors;

5. EMBs of ECONEC and ECF-SADC regions recognize that while the use of technology is a welcome innovation in the electoral process, elections are governed by law. Consequently, efforts must be made to address the gaps between the technological innovations and the responses of the legal framework to these innovations by enacting clear and unambiguous provisions in the electoral guidelines and regulations which permit their deployment in good time before elections. In enacting such "fit for purpose" provisions and regulations, EMBs must take into consideration such obligations under international and regional protocols and best practices governing elections;

OPPORTUNITIES AND CHALLENGES IN THE USE OF TECHNOLOGY IN ELECTIONS

6. EMBs of ECONEC and ECF-SADC regions are committed to strengthen capacity development and training of their electoral officials to promote efficiency, effectiveness and performance in the use of electoral technology in the delivery of free, fair, credible, transparent and peaceful elections and provision of better electoral services to the people. Efforts should be made towards the establishment of an African Technical Institute to drive home-grown research and innovation in electoral technology;
7. EMBs of ECONEC and ECF-SADC regions are committed to deploying appropriate technology to pool election resources, materials and experts for common use across both regions, based on the principle of mutual assistance, burden sharing and comparative advantage;
8. EMBs of ECONEC and ECF-SADC regions will continue to expedite action on the use of technology to provide access to information and promote political inclusivity and full participation and representation of women, youth, People Living with Disabilities and all other marginalised groups, including IDPs and the Diaspora in political process; and
9. EMBs of ECONEC and ECF-SADC regions are fully cognisant that for technology to be an enabler in promoting electoral trust and integrity, it must be simple, accurate, verifiable, secure, transparent and understood by all stakeholders. While care must be taken that the use of technology is not over-regulated in terms of legal provisions, such usage must be well-grounded in law as technology cannot operate in a vacuum or with itself.
10. EMBs of ECONEC and ECF-SADC regions pledge to further collaboration and to use the Abuja Conference as a turning point in a collective effort to deepen the deployment of technology for credible elections and building of stable democracies in Africa.

Adopted in Abuja, Nigeria on Wednesday, 11 April 2018

Professor Mahmood Yakubu
INEC Chairman & ECONEC President
ECF-SADC

Monica Frassoni
ECES President

Adv. Notemba Tjipuena
Chairperson,

With the support of:

European Union

EUROPEAN CENTRE FOR ELECTORAL SUPPORT

Annex 3: List of participants at the conference on use of technology inelections in the ECOWAS and SADC regions

The Conference had in attendance **a total of 308 participants** including Chairpersons, Vice Chairpersons and Members of Election Management Bodies of the ECOWAS and SADC countries, Representatives of the Ministries and Agencies in charge of elections in some ECOWAS member states, as well as the Chairman of the Election Commission of Jordan and of the Independent Electoral and Boundary Commission of Kenya, who gave the Keynote Address. Also, in attendance were the EU Ambassador to Nigeria and ECOWAS, members of the Diplomatic Corps in Nigeria and representatives of the ECOWAS and African Union Commission. Other participants include election and election technology experts, staff of INEC, ECONEC and ECF-SADC Secretariat, leaders and representatives of political parties and Civil Society Organisations, the media, EU-SDGN project implementing partners and development partners, including the Open Society Initiative for West Africa (OSIWA), the German Agency for International Cooperation (GIZ), International Foundation for Electoral Systems (IFES) and other stakeholders.

Below is a list of participants.

No	Name	Country/Org./EMB/	Designation
1	Aliyu Bello	INEC Nigeria	Deputy Director
2	Shittu Molia	Advanced Peoples Democratic Alliance (APDA), Nigeria	Acting Chairman
3	Chidi Nwafor	INEC Nigeria	Director
4	DR. Olusegun Ijagbemi	Justice Must Prevail Party (JMPP), Nigeria	Acting Chairman
5	Barr. Kenneth Udeze	Action Alliance (AA), Nigeria	National Chairman
6	Dr. Sarah N. Jibril	Nigeria Justice Must Prevail Party	Former Chairperson, Mother of Nations
7	Chief. Japhet Anyanwu	Re-Build Nigeria Party (RBNP)	National Chairman
8	Elder Mike	Pan Niger Delta Forum (PANDEF), Nigeria	National Society
9	Aubrey McClutcheon	National Democratic Institute (NDI)	Chief Of Party
10	Vera Oseni	Peoples Progressive Party (PPP)	General Secretary
11	Moses Oluwaseyi	Yiaga Africa WTV	Zonal Program Officer
12	Doyinsola Adeyemo	CLEEN Foundation	Research Assistant
13	Edidiong Idang	The Albino Foundation	Program Officer
14	Jake Epelle	The Albino Foundation	Executive Director
15	Solomon Omai	National Youth Council of Nigeria (NYCN)	Vice Chairman
16	Yusuf Ibrahim	Vligeria	National Secretary
17	Nuhu Musa	Peoples Democratic Party (PDP), Nigeria	Youth Leader
18	Aroh Michael	Grassroots Development Party of Nigeria (GDPN)	Secretary General, Abuja Municipal Area Council
19	Elegbe Amos	People for Democratic Change (PDC), Nigeria	Youth Leader

20	Georgina Dakpokpo	Young Democratic Party of Nigeria (YDP)	National Chairman
21	Ayodele Oluwadiya	Peoples Democratic Party (PDP), Nigeria	Local Government Youth Leader
22	Dr. Abdul Ahmed Isiaq	Social Democratic Party (SDP), Nigeria	Deputy National Coordinator
23	Dr. James Okoroma	Action Democratic Party (ADP), Nigeria	National Secretary
24	Sadare Oladimeji	Socialist Party of Nigeria (SPN)	National Organising Secretariat
25	Amb. Odion Okpebhole	Grassroots Development Party of Nigeria (GDPN)	National Chairman
26	Alh. Gani Galadima	Allied Congress Party of Nigeria (ACPN)	Member
27	Rev. Olusegun Peters	Democratic Peoples Congress (DPC)	Member
28	Dr. Onwuya A. Abraham	Freedom and Justice Party (FJP)	Member
29	Mustafa Bala	National Unity Party (NUP)	Member
30	Samaila Umar Sibawa	African People's Alliance (APA), Nigeria	Member
31	Chief Sam Eke (Phd)	Green Party of Nigeria (GPN)	Member
32	Dr. Manga S. Asha	Advanced Congress of Democrats (ACD), Nigeria	Member
33	Prince Frank Ukonga	Democratic Alternative (DA)	Member
34	Bea Reaud	United States Agency for International Development (USAID), Nigeria	Governance Expert
35	Hon. Hamisa Santu Nar	Nigeria	Politician
36	Olukayo Oshiariyo	All Grassroots Alliance (AGA), Nigeria	Member
37	Alh. Umar Maiza Bura	National Democratic Leadership Party (NDLP), Nigeria	National Chairman
38	Isa B. Dansarki	Masses Movement of Nigeria (MMN)	Member
39	Comrade A. Abdul	National Conscience Party (NCP), Nigeria	Member
40	Ama Ibom A.	INEC Nigeria	Staff
41	Pamela James	Abundant Nigeria Renewal Party (ANRP), Nigeria	Member
42	Babalola O. O.	INEC Nigeria	Director
43	Hussein Lecky	INEC Nigeria	Personal Assistant to National Commissioner
44	Abarowei A. O.	INEC Nigeria	Director
45	Abubakar Abdullahi Sokoto	Unity Party of Nigeria (UPN)	National Secretary
46	Evelyn O. Okoroji	INEC Nigeria	Staff
47	Agnes Kareem	The Electoral Institute, INEC Nigeria	Staff
48	Onoja Delphin	Modern Democratic Party (MDP)	Member

49	Dr. Immanuel Agbo	Peoples Democratic Party (PDP), Nigeria	Deputy National Secretary
50	Engr. Bayneo C.	INEC Nigeria	Assistant Director
51	Collins Onyewah	INEC Nigeria	Systems Analyst
52	Ludwig J.	Embassy of Germany	Political Officer
53	Bolade Eyinla	INEC Nigeria	Chief Technical Adviser to the Chairman
54	Saidu Bobboi	KOWA Party (KP), Nigeria	National Chairman
55	Dao Lansane	Commission Electorale Nationale Indépendante (CENI), Burkina Faso	Member
56	Alabi William	Nigeria Guardian	Editor
57	Samson Itodo	Yiaga Africa	Executive Director
58	Tumininu Adak	Yiaga Africa	Programme Officer
59	Chizoba Onu	Fresh Democratic Party (FDP)	Deputy Chairman
60	Fernando Satas	Comissão Nacional Eleitoral (CNE), Angola	Director
61	Oke Francis	ECOWAS Network of Electoral Commissions (ECONEC)	Permanent Secretary
62	Dr. Salmak Abbasi	Independent Consultant	Chief Executive Officer
63	Akin Akingbulu	Institute for Media and Society (IMS), Nigeria	Executive Director
64	Tiando Emmanuel	Commission Electorale Nationale Autonome (CENA), Benin	Chairperson
65	Pholiue Dlamini Shakantu	Swaziland	Chairperson
66	Molefe Phirinyane	Independent Electoral Commission (IEC), Botswana	Commissioner
67	Harriet Blesh	United Kingdom	Country Manager
68	Omaliko Cathroma Maryam	Project Development Network	Project Manager
69	Esther Dom	Nigeria	Dairy Asset
70	Hussaini Halilu Pai	INEC Nigeria	Resident Electoral Commissioner (REC), Plateau State
71	Prof. James Apam	INEC Nigeria	Resident Electoral Commissioner (REC), Kogi State
72	Abubakar A Nahuche	INEC Nigeria	National Commissioner
73	Nwachukwu Orji	INEC Nigeria	Resident Electoral Commissioner (REC), Anambra State
74	Egwu S.G.	INEC Nigeria	Resident Electoral Commissioner (REC), Niger State
75	U. Silaigwana	Zimbabwe Electoral Commission	Acting Chief Executive Officer
76	Prof. Francis Chukwuemeka Ezeomu	INEC Nigeria	Resident Electoral Commissioner (REC),
77	Dr. J.V.C Iloh	INEC Nigeria	Resident Electoral Commissioner (REC),

78	Bimbo Oladunjoye	INEC Nigeria	Assistant Director
79	Ndianga Sylla	Independent Consultant, Senegal	Expert
80	Prof. M. J. Kuna	INEC Nigeria	Special Adviser to the Chairman
81	Prof. R. A. Shehu	INEC Nigeria	Resident Electoral Commissioner (REC),
82	David Asemo	INEC Nigeria	Deputy Director
83	Kassim Salau	INEC Nigeria	Deputy Director
84	Saseyi Feyjima	INEC Nigeria	Deputy Director
85	Maryam Iya Musa	INEC Nigeria	Director
86	Ibrahim Abdullahi	INEC Nigeria	Resident Electoral Commissioner (REC),
87	Fabien Marie	ECES	Senior IT Expert
88	Domingo Peter	Commission Electorale Nationale Autonome (CENA), Benin	Director
89	Kausama A. A.	INEC Nigeria	Resident Electoral Commissioner
90	Dr. Ogunmola Adekunle	INEC Nigeria	National Commissioner
91	Jibril Ibrahim Zarewa	INEC Nigeria	Resident Electoral Commissioner
92	Eva Palmans	ECES	Head of Programmes
93	Umar Ibrahim	INEC Nigeria	Resident Electoral Commissioner
94	Musa G. Sekpe	INEC Nigeria	Acting Administrative Secretary
95	Lakunya D. Bello	INEC Nigeria	Deputy Director
96	Chukwuemeka Ugboaja	INEC Nigeria	Assistant Director
97	Amb. (Dr.) R.O. Akeju	INEC Nigeria	Resident Electoral Commissioner (REC), Ondo State
98	Nwosu Eugene	INEC Nigeria	Assistant Director
99	Emeka Owonamadu	INEC Nigeria	Resident Electoral Commissioner (REC), Enugu State
100	Illiasso Issa	Translat Ltd	Independent Consultant
101	Ambrose Nwana	INEC Nigeria	Staff
102	Salami Raouf	ECOWAS Network of Electoral Commissions (ECONEC)	Programme Officer
103	Raleru Eunice	Independent Electoral Commission (IEC), Botswana	Chief Executive Officer
104	Chigozirim Okoro	CLEEN Foundation, Nigeria	Senior Programme Officer
105	Ifeanyi Ikpeatusim	Nigeria	Director ICT
106	Oluwatobi Samuel Bankole	Nigeria	Expert
107	Kole Shettima	MacArthur Foundation	Country Director
108	Asiriabo Aminat Bukky	Ministry of Budget and National Planning	Programme Officer (EU-SDGN)
109	Daniel Ounda	Kenya	Counsellor

110	Catherine Angari	Open Society Initiative for West Africa (OSIWA), Nigeria	Programme Coordinator
111	Ekanem Joy	Open Society Initiative for West Africa (OSIWA), Nigeria	Programme Coordinator
112	Okwuchiri Ogo	Nigeria	Member
113	Saadatu Bowsan	APRI Nigeria	Governance Consultant
114	Babatunde O.	Nigeria	Project Manager
115	Daniel Ukpai	National Democratic Institute	ICT Officer
116	Ezeh Anderlyn	CLEEN Foundation	Research Assistant
117	Richard Bezis	Spain	Electoral Solution Architect
118	Tony Iyare	International Press Centre/National Democratic Reporters	Editor
119	Thomas Kioindo	National Electoral Commission, Tanzania	Commission Member
120	Hon Ojinka Geff	Coalition for Change	Chairman
121	Phidelia Aney	GIZ/ECOWAS	Advisor
122	Dr Remy Ajiboye	Economic Community of West African States (ECOWAS)	Director
123	Adi Amonia	Watching the vote(Yiaga)	Zonal program Officer
124	Antonio Pereira Da Silva Ja	CNE/Guinee Bissau	
125	Peter Wolf	International IDEA	Senior Global Electoral Advisor
126	Oumar Kanoute	Commission Electorale Nationale Indépendante (CENI) Mali	Vice President
127	Osaro Odemwinqie	EU Delegation, Abuja	Political Adviser
128	Pauline Torehall	EU Delegation Abuja	Head Political
129	Fikirini Frank	Commission Electorale Nationale Indépendante (CENI), DRC	Commission Member
130	Malonda Ngimbi Ronsard	Commission Electorale nationale indépendante (CENI), DRC	Commission Member
131	Seke Mavinga Jonathan	Commission Electorale Nationale Indépendante (CENI), DRC	Commission Member
132	Sarah M. Jegede	National Electoral Commission (NEC), Liberia	Co. Chair
133	Aladoua Amarda	Commission Electorale nationale indépendante (CENI), Niger	Commission Member
134	Idrisa Jecha	Electoral Commission of Zanzibar	Snr. Election Officer
135	Jose Pedro Sambu	Comissão Nacional de Eleições (CNE), Guinea Bissau	Commission Member
136	Amos Madaha	Electoral Commission of Tanzania	IT Expert
137	Clifford Baloyi	Electoral Commission of Malawi	Commissioner

138	Antonio Salomao Chipanga	National Electoral Commission (NEC), Mozambique	Vice President
139	Stuart Murphy	Independent Electoral Commission (IEC), South Africa	Commission Member
140	Rakommanana Herz	Commission Electorale Nationale Indépendante (CENI) Madagascar	Commission Member
141	Jose Manuel Pinto Teixeira	ECES	Vice-President
142	Dylan Bwalya Kasonde	Electoral Commission of Zambia	Director, ICT
143	Dr Khalid Kalaldeh	Independent Electoral Commission (IEC), Jordan	Chairman
144	Aous Quataishat	Independent Electoral Commission (IEC), Jordan	Adviser
145	KouaKou KOUASSI Julien	Commission Electorale Independante (CEI), Cote D'Ivoire	Commission Member
146	Justice Semistocles Simon Kaijage	National Electoral Commission (NEC), Tanzania	Chair Person
147	Michael Boadu	Electoral Commission of Ghana	Commission Member
148	Marinette Esparoh	Electoral Commission of Seychelles	Commission Member
149	Gerard Limsam	Citizen Democracy Watch Seychelles	Independent Expert
150	Latuf Abdou	Commission Electorale Nationale Indépendante (CENI), Comoros	Commission Member
151	Dr Jaza Ahmed Mohamad	Commission Electorale Nationale Indépendante (CENI), Comoros	President
152	Muhabi CHISI	National Electoral Commission (NEC), Malawi	Director ICT
153	Juma H Ussi	Electoral Commission of Zanzibar	IT Manager
154	Silas K. Njeru	Independent Electoral and Boundaries Commission (IEBC), Kenya	Commission Member
155	Lebohany Bulane	Independent Electoral Commission (IEC), Lesotho	IT Manager
156	Hon. Justice Esau E Chulu	Electoral Commission (EC), Zambia	Chairperson
157	DAO Lansane	Commission Electorale Nationale Indépendante (CENI), Burkina-Faso	Commissioner
158	Barry Ahmed Newton	Commission Electorale Nationale Indépendante (CENI), Burkina-Faso	Chairperson
159	Dogou Alain	Commission Electorale Independante (CEI) Cote D'Ivoire	Vice President
160	Aida Ghebreselasie	Norwegian Embassy, Abuja	Staff
161	Shiaka Aminetu	INEC Nigeria	Staff

162	Chinedu	ECOWAS Network of Electoral Commissions (ECONEC)	Programme Officer
163	Francis Laleye	Independent Consultant	Expert on Elections
164	Robert Gerenge	African Union	Department of Political Affairs
165	Frikini Frank	Commission Electorale Nationale Indépendant (CENI) DRC	Commission Member
166	Mariama Toure	ECOWAS Network of Electoral Commissions (ECONEC)	Programme Assistant
167	Peter Kariuki	Independent Electoral and Boundaries Commission (IEBC), Kenya	Charge' d affaires
168	Lamine Lighe	National Electoral Commission, Liberia	Executive Director
169	Dr . Nyaphisi	Electoral Commission, Lesotho	Commissioner
170	Charlotte Osei	Electoral Commission (EC), Ghana	Chairperson
171	Nonalahla	Independent Electoral Commission (IEC), South Africa	Commission Member
172	Kassim G. Gaidam	INEC Nigeria	Resident Electoral Commissioner (REC), Adamawa State
173	Obo Effanga	INEC Nigeria	Resident Electoral Commissioner (REC), (Edo State)
174	Ali Asumani	Democratic Republic of Congo, Embassy, Abuja	Staff
175	Fariala Bonyoma	Democratic Republic of Congo, Embassy, Abuja	Staff
176	Olumekun Sam	INEC Nigeria	Resident Electoral Commissioner (REC), (Lagos State)
177	Dr Frankland O. Briyai	INEC Nigeria	Resident Electoral Commissioner (REC), Cross River State
178	Dr M. Lecky	INEC Nigeria	National Commissioner
179	Ibrahim Abdullahi	INEC Nigeria	Staff
180	Nangaa Yobelvo Corneille	Commission Electorale Nationale Indépendante (CENI), Democratic Republic of Congo	Commission Member
181	Chinwe Ogbuka	INEC Nigeria	Assistant Director
182	Raoilijon Francois D Assise	Commission Electorale Nationale Indépendante (CENI), Madagascar	Commission Member
183	A T Muazu	INEC Nigeria	National Commissioner
184	Dr. Adekunle . L Ogunmola	INEC Nigeria	National Commissioner
185	Amina Zakari	INEC Nigeria	National Commissioner
186	A. A. Nahuche	INEC Nigeria	National Commissioner

187	Azoti Hodabalo	Commission Electorale Nationale Indépendante (CENI), Togo	Commission Member
188	Keguewe Sogoyou	Commission Electorale Nationale Indépendante (CENI), Togo	Commission Member
189	Shalva Kipshidze	International Foundation for Electoral Systems (IFES), Nigeria	Chief of Party
190	Laolu Olawumi	EU Delegation, Abuja	Programme Manager
191	Saleh M. Auwalu	INEC Nigeria	Chief Administrative Officer
192	Asmau Sani Maikudi	INEC Nigeria	Resident Electoral Commissioner (REC), Zamfara State
193	Abdullahi A. Kaugama	INEC Nigeria	Resident Electoral Commissioner (REC)
194	Prof. James Apam	INEC Nigeria	Resident Electoral Commissioner (REC), Kogi State
195	Prof. Bolade Eyinla	INEC Nigeria	Chief Technical Adviser to the INEC Chairman
196	Prof. Godwill Obioma	INEC Nigeria	Resident Electoral Commissioner (REC), Ebonyi State
197	AT Muazu	INEC Nigeria	National Commissioner
198	Emeka Ononamadu	INEC Nigeria	Resident Electoral Commissioner (REC), Enugu State
199	Marinette Esparom	Electoral Commission, Seychelles	Commission Member
200	Mike Igini	INEC Nigeria	Resident Electoral Commissioner (REC), Akwa Ibom State
201	Sadiq A. Musa	INEC Nigeria	Resident Electoral Commissioner (REC), Sokoto State
202	Dr. Akin Akingbulu	Nigeria	Exec. Director, IMS
204	Prof. L. Adele Jinadu	Nigeria	Consultant
205	Muhammad Jalal	International Rescue Committee	Member
206	Garshon Benson	Democratic Peoples Party (DPP), Nigeria	National Chairman
207	Grace Okpe	CLEEN Foundation	Programme Assistant
208	Pathe Dience	Commission Electorale Nationale Indépendante (CENI), Guinee	Commissioner
209	Ajayi Segun	Nigeria	Interpreter
210	Keita Ousmane	Guinee Conakry	IT Manager
211	Awa Liva MK	Electoral Commission, Cabo Verde	Commission Staff

212	W. W. Chebukati	Independent Electoral and Boundaries Commission (IEBC), Kenya	Chairman
213	Chipakata Chuta	Electoral Commission (EC), Zambia	Database Administrator
214	Damadou B. Niam	Direction Générale des Élections (DGE), Senegal	Commission Member
215	Oumaroo Sam	Commission Electorale Nationale Indépendante (CENI), Niger	IT Expert
216	B. A. Amad	Commission Electorale Nationale Indépendante (CENI), Mali	President
217	Utloi Le Silaienawa	Electoral Commission, Zimbabwe	Acting Chief Electoral Officer
218	Miatta French	National Electoral Commission (NEC), Sierra Leone	Commissioner
219	Dalonda Ronsard	Commission Electorale Nationale Indépendante (CENI), Democratic Republic of Congo	Chief Executive Officer
220	Godwin George-Amadin	Nigeria Young Democracy Party	Youth Leader
221	Richards Offolindu	Nigeria Young Democracy Party	National Organising Secretary
222	Prosper O. D.	Democratic People Party (DPP)	Director of Administration
223	Hon ML Nalado	Accord	National Chairman
224	Michael Egiethus	People Trust Party	Interim National Publicity Secretary
225	Abdulrazaq Yussuf	United Democratic Party (UDP)	National Secretary
226	Waziri A. Zannah	INEC Nigeria	Administrative Secretary
227	Ibrahim babayoyuk	INEC Nigeria	Chief Information Officer
228	Rotimi Oyekanmi	INEC Nigeria	Chief Press Secretary
230	Frank Li	China	Independent Expert
231	Gabriel Chen	China	Independent Expert
232	Dr. Djaza Ahmed Nuhanes	Commission Electorale Nationale Indépendante (CENI), Comoro Island	Commission Member
233	Pholile Olamini Shakantu	Electoral Commission, Swaziland	Deputy Chairman
234	Hilda Modisane	Electoral Commissions Forum of the Southern Africa Development Community (ECF-SADC)	Program Manager
235	Alaolowe Amoda	Commission Electorale Nationale Indépendante (CENI), Niger	Vice President
236	Maria Toure	Carbo Verde	President
237	Leonard Kazubi	Electoral Commission, Zambia	Personal Assistant to the Chairman
238	Wilfred L	Independent Electoral and Boundaries Commission (IEBC), Kenya	Manager Chair Off.

239	Hon. Dr. Oshiariyo Olukayode	All Grassroots Alliance (AGA)	National Chairman
240	Dr. Jay Osi Samuel	Alliance for New Nigeria (ANN)	National Chairman
241	Chief Japhet Anyanwu	Re-Build Nigeria Party (RBNP)	National Chairman
242	Aliya Nasiru Libata	National Democratic Liberty (NDLP), Nigeria	National Secretary
243	Opuruozo Chinwendu	Re-Build Nigeria Party (RBNP)	Secretary
244	O.O. Babalola	INEC Nigeria	Director
245	Aishat A. Orulebaja- Ayoola	INEC Nigeria	Staff
246	Chinwe Ogbuka	INEC Nigeria	Assistant Director
247	Fumilayo Adegbite	INEC Nigeria	Assistant to Chief Technical Adviser
248	Alhaji Hudaim Abubakar Agaire	Northern Youth Council of Nigeria (NYCN)	President
249	Leonardo Eugenio Bila	Electoral Commission, Mozambique	Director
250	Nentawe Yilwatda	INEC Nigeria	Resident Electoral Commissioner (REC), Benue State
251	Keita Ousmane	Commission Electorale Nationale Indépendante (CENI), Guniea	Head of IT Department
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253	Chula Chapa	Electoral Commission Zambia	Commission Member
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255	Jose Carngino	Electoral Commission, Angola	IT Expert
256	Maria do Rosario Goncalves	Electoral Commission, Cabo Verde	Chairperson
257	Dylan Kasonde	Electoral Commission ,Zambia	Director, ICT
258	Malti Danjuma	Youth Hub Africa	Media
259	Michael Egieltwa	Peoples Trust Party	Interim National Publicity Secretary
260	Okorie Orji	United Progressive Party	Representative National Chairman
261	Usman Mamman	Nigeria Elements Progressive Party (NEPP)	Chairman
262	Hon Hamusu Santuraki	Mega Party of Nigeria (MPN)	National Chairman
263	Alh Umar Mai Zabura	National Democratic Liberty (NDLP), Nigeria	National Chairman
264	Wasiru Aliku	National Democratic Liberty (NDLP), Nigeria	Acting National Secretary
265	Aminu Idris	INEC Nigeria	Director
266	Salau Kassim A	INEC Nigeria	Deputy Director
267	Barr. Mutiu Olaleke Agboke	INEC Nigeria	Resident Electoral Commissioner (REC), Oyo State
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269	Monica Frassoni	ECES	President

270	David Le Notre	ECES	Project Director, Nigeria
271	Rudolf Elbling	ECES	Deputy Project Director
272	Agung Putranto	ECES	Senior Graphics Designer
273	Cathy Latiwa	ECES	Project Officer
274	Manji Wilson	ECES	Electoral Administration Expert
275	Isiaka Yahaya	ECES	Electoral Administration Expert
276	Florent Oke	ECES	Monitoring & Evaluation Officer
277	Samson Fadare	ECES	ICT Officer
278	Abdulkarim Nasir	ECES	Project Secretary

Biographies of Authors

Fabio Bargiacchi

Fabio Bargiacchi is the ideator of ECES and the co-founder together with Abbot Apollinaire Malu Malu. He is a member of ECES' Management Board and has been serving as Executive Director of ECES' Management Unit since July 2011. Over the last 10 years in this position, he together with his colleagues have led ECES to become one of the three most important electoral assistance providers, implementing projects funded by the EU and recognised as one of the most important actors in the field globally, along with UNDP, IDEA, IFES, NDI and IRI.

As Founder/Executive Director, he led ECES to obtain the TRACE and ISO 9001 certifications for its financial and quality management standards having implemented more than 80 framework contracts in over 50 countries mostly, but not only limited to Africa and the Middle East. He has played and maintains a strategic role in resource mobilisation which has resulted in ECES' funding coming mainly from the EU and its Member States as well as other donor agencies and multinational Corporations.

Fabio also led ECES to obtain ten copyrighted certificates including innovative methodological tools for the implementation of ECES' strategy, called the "European Response to Electoral Cycle Support" (EURECS), of which he is the main author. These copyrights include the Standard Operating Procedures (SOP), ECES Communication & Visibility Guidelines, the Electoral Political Economy Analyses (EPEA), the Electoral Security Threat Assessment, the project approach contributing to Preventing Election-related Conflicts and Violence (PEV), the two cascade electoral management training curricula known as the "Leadership and Conflict Management Skills for Electoral Stakeholders, LEAD" and "Leadership and Quality Management Skills for Electoral Administrators, LEAD-Q" respectively, the Innov-Elections project and the Electoral Translator.

Fabio's work in the elections field dates back to the early 1990s. From 1997 onwards, he has continuously extended his expertise in the field of electoral support at the international level. In the period 1997-2004 he held a variety of posts in the field of electoral assistance and observation with the EU, the UN and the OSCE. He operated for long term assignments in countries such as Central African Republic, Zimbabwe, West Bank and Gaza, Zambia, Kenya, Nigeria, Haiti, Tanzania, Democratic Republic of Congo Suriname and Indonesia where he worked as Senior Election Operations Expert, Training/Reporting Advisor and Coordinator of EU Election Observers, among other senior positions.

Fabio also developed a deep knowledge in project cycle management, particularly in the Democratic Governance field as explicitly shown by his experience working for the European Commission at the Delegation of the EU in Maputo (Mozambique) from 2001 to 2003 and at the EU Headquarters (European Commission, EuropeAid) in Brussels between 2004 and 2006 as Election Specialist. From January 2007 to December 2010, Fabio served as Coordinator of the "Joint EC UNDP Task Force On Electoral Assistance" (JTF) and Senior Electoral Assistance Advisor at the UN/UNDP Brussels Office. During this period, he contributed to the establishment of the same Joint Task Force and oversaw its activities for the identification, formulation and support for the implementation of all the EC-UNDP electoral assistance projects. From October 2004 to December 2006, he worked as Election Specialist at the Directorate for Operations Quality Support of the EuropeAid and he was the coordinator and main author of the "EU Methodological Guide on Electoral Assistance". Fabio was, thus,

involved in more than 70 UNDP projects amounting up to a sum of more than 600 million EURO from October 2004 till December 2010. Bargiacchi was also at the forefront of the conception and delivery of all the Joint EC UNDP IDEA effective electoral assistance, face-to-face and distance e-learning training from September 2005 till February 2011. From January 2011 to February 2012, he worked as Chief Technical Advisor for the EU funded "Project in Support of the Electoral cycles for the five Portuguese Speaking Countries in Africa (Angola, Cabo Verde, Guinea Bissau, Mozambique, Sao Tome and Principe) and Timor Leste", implemented by the UNDP. This was the first ever trans-national electoral assistance project that focused exclusively on capacity development.

Considering his experiences with OSCE, UN/UNDP, EU and ECES, Fabio has dealt with electoral and democratisation processes in over 60 different countries and worked on the identification, formulation, implementation or evaluation of more than 100 electoral assistance projects since 1997.

From 2014 until 2019 Fabio was a Member of the Board of the European Partnership for Democracy (EPD), serving as Vice President and Acting President from 2015 to 2017. EPD is one the most important network of European civil and political society organisations working on democracy assistance.

Fabio is a BRIDGE accrediting training-facilitator and the main creator of the training curriculum "Leadership and Conflict Management Skills for Electoral Stakeholders, LEAD" conceived together with the Centre for Creative Leadership. He is a graduate of Political Science following studies at the University of Florence (Cesare Alfieri) and at the "Universite Libre de Bruxelles" and holds a Master of Arts on Society, Science and Technology after studies at University of Roskilde (Denmark) and University of Oslo (Norway).

In the last 14 years, he has authored, coordinated, co-authored and contributed to a series of election-related publications and papers:

- ✓ Delivering Electoral and Democracy Support during the COVID 19 period. ECES preparedness and response: Innov-Elections (2020)
- ✓ ECES Standard Operating Procedures for the Implementation of the European Response to Electoral Cycle Support (2019)
- ✓ ECES Communication and Visibility Guidelines (2019)
- ✓ “The potential of EU Funded electoral assistance to support the prevention of election related conflict and violence: Lessons from the Southern African Region”
- ✓ EURECS - A European Response to Electoral Cycle Support (2016)
- ✓ Using International Standards. Council of Europe Handbook for Domestic Election Observers (2013)
- ✓ Essential Consideration of Electronic Voting published by International IDEA (2011)
- ✓ ISPI Working Paper on the Electoral Cycle Approach: Effectiveness and Sustainability of Electoral Assistance (2011)
- ✓ EU and Peace building, Policy and Legal Aspects: EU Electoral Support: (2010)
- ✓ EC-UNDP Operational Paper on Procurement Aspects of Introducing ICTs in Electoral Processes: the specific case of biometric voter registration (2010)
- ✓ EC-UNDP Operational Guidelines. Implementation of Electoral Assistance Programmes and Projects (2006 and 2008)
- ✓ ACE Focus on Effective Electoral Assistance (2007)
- ✓ UNDP Electoral Assistance Implementation Guide (2007)
- ✓ EC Methodological Guide on Electoral Assistance (2006)

Languages: Italian, French, English, Portuguese and Spanish.

Paulo Siqueira

Paulo is a professional in the field of technology, information systems and data management, with strong background in innovation and in the use digital processes, including civil and electoral registration, vital statistics, and identity management. He has more than 35 years of professional experience working with innovation, digital transformation, and digital technologies, most of them working in international organizations. He has a master's degree in Computer Science and a bachelor's degree in Social Communications.

Experienced in working with the European Union, United Nations, regional organizations, governments, civil and electoral management bodies, non-governmental organizations, academic institutions, and institutes and foundations.

He has developed skills in designing, implementing and monitoring registration / processes and developing digital strategies for several countries, ensuring that activities are in line with the international standards. He has strong experience in design, lead, supervise, coordinate and contribute to the implementation of assistance programs. Paulo is a result driven manager of international teams, supporting technical assistance projects with ECES, UN, EU, UNICEF, UNDP, IFES and other international organisations. Hands-on experience with international policies and procedures, procurement processes, technical specifications, and acquisitions, including management of outsourced projects. Experienced in proving global and regional technical support and services, focused on the implementation of digital strategies and identity management.

Paulo Siqueira possess solid expertise in electoral and operations management, voter and civil registration systems, electoral results and transmission, integration of biometric systems, database development and management, formulation of ICT plans and familiarity with election related legislation. Working knowledge of social networking platforms and development of mobile applications.

He has worked supporting programs in transitional and post-conflict countries including Vanuatu, Somalia, Honduras, Zimbabwe, Burkina Faso, Lesotho, Moldova, Kenya, Nepal, Angola, Somaliland, Nigeria, Timor Leste, Mozambique, Guinea-Bissau, Palestine, Tonga, Sao Tome & Principe, Cabo Verde, Pakistan, and Malawi.

Native Portuguese speaker, fluent in English and Spanish, and with working knowledge of French, Paulo Siqueira is an experienced technical trainer.

Hamza Fassi-Fihri: Project Coordinator

Hamza Fassi-Fihri is a Belgian-Moroccan citizen, former MP and politician in Belgium, with twenty years' experience in democracy and governance. After a first career as a journalist, Hamza engaged in active politics, in which he got involved for fifteen years, holding several leadership positions within his party, including the national vice-presidency.

As an MP, Hamza specialized in economic affairs, labor and cultural policies, as well as in democracy, governance and electoral issues, working on electoral reforms and holding responsibilities on various aspects of the electoral process. As the chair of the Belgian delegation to the Francohonie Parliamentary Assembly for five years, Hamza also took part to election preparation debates with EMBs, mainly from African countries. He also took part to election observation missions (Togo, Madagascar, Tunisia).

Alongside his parliamentary career, Hamza was involved at the local level, serving twelve years at the municipal council of the city of Brussels, six of which as deputy Mayor. A position

in which he oversaw the organization of two electoral cycles, supervising the electoral operations at the local level.

Since 2019, and after fifteen years in active politics, Hamza is dedicating his professional life to democracy and governance development. After a first experience in Tunisia with NDI, supporting political parties and Tunisian parliament as a program director, he is now the project coordinator for ECES on the EUSDGN project in Nigeria.

Hamza is 44, married and father of two. He holds an executive master in public administration from the LSE (UK) and masters in international relations (ULB, Belgium), journalism and economy (UCL, Belgium).

Manji Wilson: Deputy Project Coordinator

Manji currently serves as Deputy Project Coordinator at ECES within the EU Support to Democratic Governance in Nigeria (EU-SDGN) project. In concert with the Project Coordinator, he supports to maintain cordial and productive relationships with relevant international, national stakeholders including the EU Delegation in Abuja, Independent National Electoral Commission (INEC), EU-SDGN partners and other project stakeholders. He supports the management, supervision and coordination of technical, administrative and financial staff of the project including experts, consultants and local staff and also participates in the Programme Steering Committee and Technical Committee meetings. He functions as a National electoral advisor vested with the responsibility to follow up the implementation of the project activities while ensuring effective cooperation and coordination between the project and electoral stakeholders. He supports the design and implementation of the project's action plan and capacity building training to INEC and other electoral stakeholders, report drafting: Analytical, technical, sport report and project activity report. He is part of the ECES Global Coordination Cell and management, where he's involved in several aspects of building the organisation's core vision and was a part of the ECES team deployed to formulate the EU election support programme to the Government of Ethiopia (The EURECs and PEV-Ethiopia projects. He has also been part of the EU Election Observation missions and understands EU development cooperation instruments.

His professional background includes experience working with European Union Election Observation Mission (EUEOM), Nigeria, the Project based staff/ Media Monitor/Analyst/Logistics Assistant familiarizing Himself with the experience of working in a Diplomatic environment using quantitative and qualitative methodology provided by the Media Expert to measure time, Plan and Tone of electoral activities. KRP Communications as a Development Consultant and Program Officer, INEC as a Distribution Officer, and National Population Commission as a field enumerator. He has also worked in different capacities with other local NGOs as the BIHA Project where he supervised and supported the design and implementation of strategies with respect to women, youth, IDPs and People with Disabilities inclusion in democratic processes as Project Volunteer/ Coordinator among others. He is technically minded with expertise in the analysis, project conception, project cycle management, planning, operations, EU procurement/financial procedures, monitoring techniques, including the design and application of the logical framework and appraisal of interventions in the area of democratic governance especially through supporting effective electoral assistance delivery via policy dialogues with relevant government ministries, agencies, development partners and other key stakeholders in the sector to lead and support the design and implementation of action plans.

He has keen interest and facilitates actions in holistic electoral reforms, international development cooperation and building strategic institutional communication frameworks. He

is a passionate development worker who possesses years of experience working to address multi-problem developmental issues such as electoral systems, social inclusion, leadership and governance, political party and parliamentary strengthening, policy advocacy, consensus building and social movements organising. He also possesses competence in addressing issues bothering on Human rights, rule of law, Gender based violence and other societal norms while also championing the causes of marginalised demographics through promotion of inclusion in developmental processes. He is an expert at carrying out needs assessments and identifying solutions to these needs. He has supported various programs and initiatives that have shaped participation in democratic processes, accountability and transparency in Governance.

Isiaka Yahaya: Senior Electoral Administration Expert

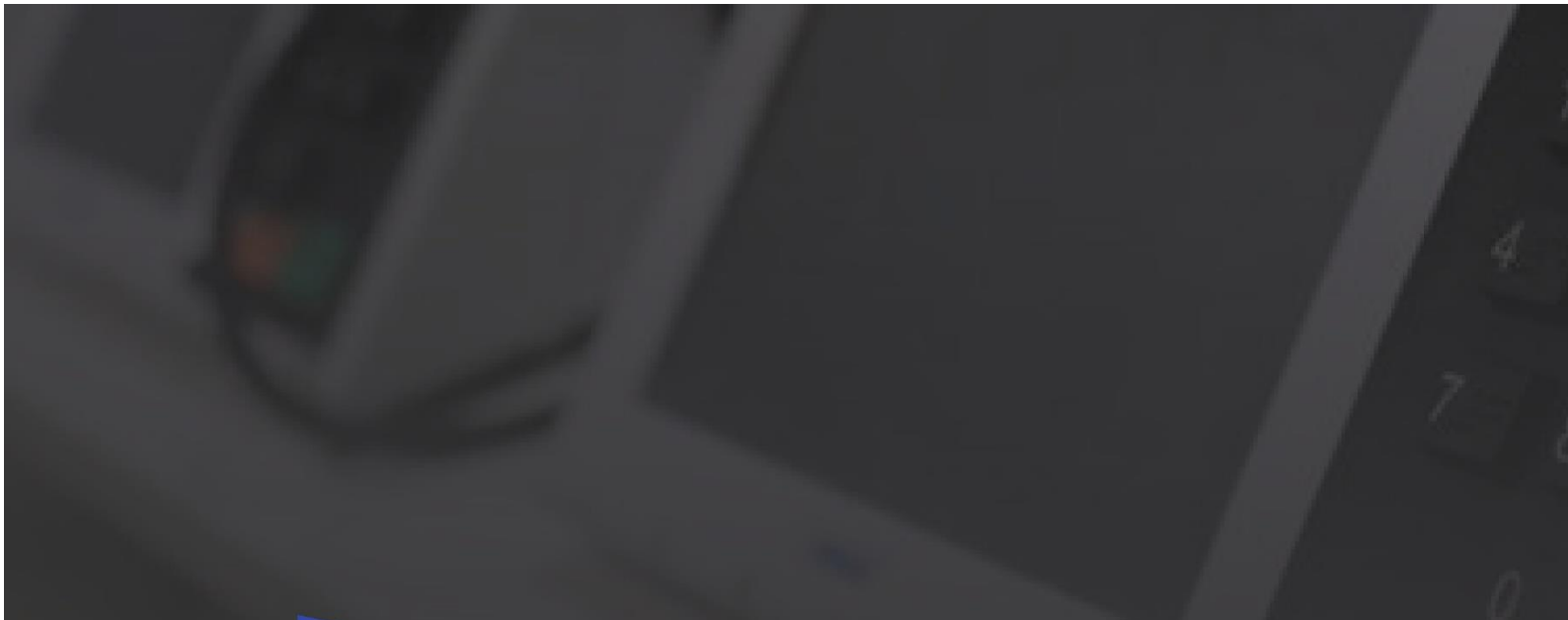
Isiaka is the Electoral Administration Expert at ECES Nigeria charged with the general responsibility of supporting delivery of electoral assistance to the Independent National Electoral Commission (INEC) within the context of the European Union Support to Democratic Governance in Nigeria (EU-SDGN). His specific responsibilities include providing analytical updates on Nigeria's political and electoral context for evidence-based programming, supporting implementation of project activities and developing periodic reports on its status, carrying out thematic research for development of scientific papers on electoral issues and support to preparation of project proposals.

Before joining ECES, Isiaka worked with the Democratic Governance for Development Project of the United Nations Development Programme (UNDP/DGD) as the National Media Expert between October 2010 and February 2013 providing media and civic education support to INEC and other electoral stakeholders. In the lead up to the 2011 General Elections, Isiaka organized training workshops on Conflict Sensitive Election Reporting for over 300 journalists across the six geo political zones including 50 members of INEC press corps, facilitated the publication of the ***INEC Media Guide for Election Coverage***, organized consultative meetings with Media Owners, Gatekeepers and Associations, and supervised the setting up and operations of six media centers across the country.

For the 2015 Election, Isiaka was the Assistant Political Analyst at the European Union Election Observation Mission (EUEOM) from January to April 2015, providing political and security updates to the mission on a daily basis drawing from his theoretical knowledge and vast experience of Nigerian history and politics. His support was useful in responding to the dynamics of the political environment in the period leading to the 2015 election and establishing and maintaining contacts with key electoral stakeholders.

Isiaka had worked with the Federal Government of Nigeria for over two decades and rose to the senior position of Deputy Director of Public Affairs at the National Population Commission in 2009, in which capacity he supervised the implementation of nation-wide advocacy and publicity programmes for population censuses, and participated in managing the political sensitivity and conflict mitigation of Nigerian censuses through top level engagements with key stakeholders at national and sub national levels.

Dr. Yahaya holds a Bachelor of Science degree in International Studies from Ahmadu Bello University Zaria as well as Master of Science and Doctor of Philosophy degrees in Political Science from University of Ibadan, Nigeria.



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