HOW THE USE OF TECHNOLOGY HAS ENHANCED THE ADMINISTRATION OF ELECTIONS IN DEVELOPING COUNTRIES: A CASE OF MALAWI

MASTER OF PUBLIC ADMINISTRATION AND MANAGEMENT THESIS

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UNIVERSITY OF MALAWI

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By

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DECLARATION

This thesis is my own original work which has not been submitted to any institution for similar purposes. Acknowledgements have been duly made where other people's work have been used. I bear the responsibility for the contents of this paper.

KING NORMAN CHEKETE RUDI

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Full Legal Name

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Signature

_____

Date

CERTIFICATE OF APPROVAL

The undersigned certify that this thesis represents the student's own work and effort and has been submitted with our approval.

Signature: _____**Date:**_____

Happy Kayuni, PhD (Professor)

Main Supervisor

Signature: _____**Date:**_____

Dan Banik, PhD (Professor)

Second Supervisor

DEDICATION

I dedicate this to my parents, posthumously and to my wife Joyce and children Clive, Mervis, Fanuel, Christabel and Hadassah who were deprived of quality time at the time of working on this.

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ABSTRACT

General elections world over including Malawi, have been faced with many challenges that made the outcome of the elections to be deemed as not true reflection of the wishes of the populace. Electoral commissions, including the Malawi Electoral Commission (MEC) have adopted several systems to harness the electoral credibility and this includes adoption of ICT-based electoral management system (EMS). This study examined the impact of the ICT-based election management system on the credibility of the election with emphasis on 2019 Tripartite Elections. This cross-sectional prospective qualitative study collected data from key informants of an electoral process in Malawi, who included various election stakeholders' such as electoral commission members of staff, Commissioners, party representatives and representatives of the non-governmental organizations and academicians. Results showed that ICT-based system performed well in some parts of the electoral processes and failed in some parts. For example, the ICT-based system performed well in the registration and verification of voters, nomination of candidates, results tabulation and transmission as well as information results dissemination. However, the ICT-based system did not perform well in the areas of results transmission as well as stakeholders' confidence and transparency. Some of these issues were attributed to incomprehensive consultations as well as continued use of paper-based system in the electoral process as the paper-based system worked synergistically with the ICT-system. Therefore, it is recommended that the electoral commission should improve on consultations with regards to ICT-based system as well as adopting the ICT based system in all the other parts of the electoral processes that are still using the paper-based system to ensure a free, fair, transparent and cost-effective elections.

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LIST OF ABBREVIATIONS AND ACRONYMS

AFIS	Automatic Fingerprints Identification System
AFORD	Alliance for Democracy
BVR	Biometric Voter Registration
DPP	Democratic Progressive Party
EC	Electoral Commission
EMB	Election Management Body
EMS	Electoral Management System
ERM	Electoral Risk Management
EVM	Electronic Voting Machine
EVR	Electronic Voter Register
GIS	Geographical Information System
ICT	Information Communication and Technology
IEBC	Independent Elections and Boundaries Commission
INEC	Independent National Electoral Commission
INGOs	International Non-Governmental Organizations
MCP	Malawi Congress Party
MEC	Malawi Electoral Commission
NINA	Numéro d'Identification Nationale
OHCHR	Office of the High Commissioner for Human Rights
OPPD	Office of Project Planning and Design

CHAPTER ONE

INTRODUCTION

1.1 Introduction

In democratic ideals, citizens have a right to choose a leader who should govern their sovereign nationality and whom they trust someone who can steer them towards their nation's destiny (Ahmad, 2015). Elections are organized explicitly to ascertain and honour the people's will as to who should occupy elected office and govern in the people's interest (Merloe, 2008). This demonstrates the collective character of the right to genuine elections, while international human rights instruments principally address individual rights in the electoral context. Among other guidelines, this aligns with USAIDS's *2013 Democracy, Human Rights and Governance Strategy* which highlights the centrality of participation and accountability to the achievement of human rights and democratic governance (USAID, 2020). Conducting of elections plays a significant role for the citizens in a democratic country because it gives the citizens the power and chance to participate in governance, making the government accountable and provides for political competition (Mollah, 2016).

However, it is important that the outcome of an election should be acceptable by the citizens and this can be achieved if the election is free, fair and credible, and these tenets are some of the prerequisites of democratic governance (Mollah, 2016).

For an election to be free, fair and credible, certain rules, regulations and laws that govern electoral processes must be followed and these include: Election process would be free and fair so that every adult franchise can apply their voting right equally with equal weight; and outcome of the election or counting vote would be accurate and legitimate (Mollah, 2016).

An election that mostly meets these requirements, makes people willing to participate without fear and participation by many parties to select their candidates. Elections also need to be conducted in a transparent and credible manner. This is achieved when national and international stakeholders such as the press, media, and election observers are aware of the activities going on in the electoral process as well as being able to evaluate them. Furthermore, there must be an enabling legislative framework, an impartial and neutral administration such as an election commission as well as the use of a competitive electoral process acceptable by all participating political parties. The electoral process must also be devoid of restrictions to access by all stakeholders, ballots that are cast in secret and free of tampering, fraud and threats free whilst adhering to the rule of law (OPPD, 2011; Udu et al., 2015; Oesfin, 2008; Huntington, 1993; Larry et al., 2015; Diamond, 2002; Rajasingham, 2005).

Another common challenge facing electoral systems and process is the politicization of the electoral administration processes. Such a politicization process erodes electoral integrity and, consequently, leaders and officials do not see any need to remain accountable to the public. This also results in weak confidence in election results and the elected lack the requisite legitimacy to govern. Thus, the politicization of electoral administration is one dimension of a wider, more disturbing, phenomenon which

encompasses the gradual narrowing and eventual closure of the political space, and the politicization of the bureaucracy and the judiciary, by the ruling parties, whether in the one-party state or in the dominant single party state (Makulilo, et al., 2015; ACE Electoral Knowledge Network, 2019).

When these values are missed in an electoral process, voters prefer abstaining from voting since they see that the ills of voting outweigh the benefits, political legitimacy is undermined, voter turnout is dampened and encourages protest politics that may lead to several devastating incidences and loss of property and economic gains (Mollah, 2016).

Therefore, in a bid to conduct free, fair and credible elections, election management bodies worldwide especially developed countries have innovated ways of ensuring that the elections are acceptable and some of them have been turned into best practices. Developed countries have also began adopting the systems and these include the adoption of the use of information and communication technology (ICT), transparent and inclusive processes, organisational professionalisation, legal framework reviews as well as stakeholder engagement.

Information and communication technology is a field of work that involves the use and study of desktop and laptop computers, software, peripherals, and connections to internet for information processing and communications (Ayeni & Esan, 2018). Research has shown that ICT use in election process managed to solve some of the incidents that compromised the legitimacy of elections such as multiple registrations that were used for rigging (Ejikemejombo, 2015). This is one of the reasons why studies

have been conducted (and continue to be conducted) on elections administration to, among others reasons, determine the best course of action for the enhancement of liberal democracies in different geopolitical contexts.

Although, it was reported that Nigeria is yet to meet up with international standard for the provision of viable, successful and generally accepted electoral system of democracy due to lack of full implementation of the required electronic voting system in the county that entails combining electronic voters register and smart card readers with election result devices that would be self-auditing and fully equipped with real time facilities (Agbu, 2015. It is believed that the full implementation of the required electronic voting system in Nigeria would improve election management in the country thereby meeting up with international standard.

Since the advent of democracy in 1994, Malawi has been involved in competitive politics, with several political parties joining the fray in the domestic electoral spectrum. Elections have become central to competitive politics in the country. According to Jinadu (1997), Uwizeyimana (2009), and the ACE Electoral Knowledge Network (2019), the model of democracy on which this theory of elections is based is liberal democratic (Merloe, 2008; United Nations [UN], 2015; UN Office of the High Commissioner for Human Rights [OHCHR], 2020). From 1994 General Elections, elections in Malawi were paper-based and relied mostly on manual work until 2019. For the 2019 Tripartite elections, the Malawi Electoral Commission adopted the ICT-based election management system for use. The country saw its elections being nullified on the basis that the electoral process had gross irregularities and violated sections 40,76 and 77 of the Malawi Constitution which deprived the citizens of the free, fair

and credible election and infringed on the contestants' and citizens political rights (CONCOURT, 2020). This was against the principle of adoption of the ICT into the system, one of which was to minimize or eliminate the problem (EC, 2019). Therefore, in the present study, the researcher used the case study design to qualitatively assess the impact of the use of technology on the administration of elections in Malawi with emphasis on the nullified 23rd May 2019 Presidential Election.

In Malawi, the authority to conduct elections is vested in the Electoral Commission (EC) often referred to as the Commission, as provided for in Section 75(1) of the Constitution of the Republic of Malawi (Malawi Government, 1995). Elections are thus the most important administrative process underlying Malawi's democracy. So, when it comes to running elections with efficacy and integrity, the Commission uses its powers as provided for by section 76 of the Republic of Malawi Constitution, (Malawi Government Press, 1995). The Commission decides when are business processes and technologies that are two millennia old the safest and most appropriate to use? There is thus evidence that ever-evolving technology can improve efficiency and performance in most areas of human activity. Therefore, sound electoral administration is basically a process that is aimed at ensuring the indeterminacy of elections. The task includes changes in the structure and the process of electoral administration that must be introduced or effected, if the current wave of democratization on the African continent is not to be mere epiphenomenal window-dressing (Makulilo, et al., 2015; ACE Electoral Knowledge Network, 2019).

That is why it is important to go beyond the outcomes of elections and focus on what might be called the situational factors that essentially condition and influence the

organization and conduct of elections. These include the issue of fair and equal access to all election contestants, the use and application of appropriate technologies in elections, ensuring the autonomy of the electoral bodies, and ensuring unhindered electioneering campaigns by all political parties (Makulilo, et al., 2015; ACE Electoral Knowledge Network, 2019).

Malawi has conducted democratic elections periodically after every 5 years from the year 1994. During the conduct of these elections, the Commission did not initially rely on the application of relevant technologies in their elections management processes. This ultimately, resulted in the production of voter registers that were plagued with anomalies, for instance. According to The Nation (2018), the Commission had been using a paper-based system during registration called Optical Mark Recognition (OMR), and it was only in 2018 that the Commission migrated to new biometric technology for the registration of voters in readiness for the 23 May 2019 tripartite elections. In addition to the biometric system, the Commission also experimented with the use of mobile phone technology during the voter registration confirmation process (The Nation, 2019). Over the years, the use of information technologies, which have provided solutions for many electoral hurdles, have led to the creation of accurate voter registers which has in turn simplified voting and result tallying, faster transmission of election results, among other benefits (IIDEA, 2018). Despite these developments, the 2019 elections were characterized by systematic and widespread irregularities and anomalies which, according to the country's Constitutional Court, eroded and compromised the integrity of the results (Jegwa, 2020).

1.2 Statement of the problem

The rate of technological innovation has accelerated dramatically, with new economic and societal changes occasioned by technological developments shaping our different social processes, including governance (Jenkins, Katz & Kramer, 2007; National Academies of Science, Engineering and Medicine, 2019). The use of ICT could be a powerful catalyst in promoting free, fair and credible elections (National Academies of Science, Engineering and Medicine, 2019). In most advanced democracies, ICT applications have been used to store, compute, and visualize vast amounts of data which become increasingly critical in providing electoral management bodies with the situational awareness needed for effective management of elections and electoral risks (IIDEA, 2018).

In most developing countries, technology has also become indispensable in the management of elections as it helps in the generation of voters' roll by biometric means, the use of card readers in voters' accreditation and authentication and, in few cases, electronic voting has been accomplished as an end-to-end solution (Olurode & Wali, 2017). The heavy deployment and dependence on election technology had been witnessed in Cote d'Ivoire, Gambia, Ghana, Kenya, Nigeria and South Africa (Olurode & Wali, 2017). In Malawi, the Commission, however, had for a long time used a paper-based system during registration called Optical Mark Recognition (OMR). In 2018 the Commission migrated to new biometric technology for the registration of voters in readiness for the May 2019 elections (The Nation, 2018). The Commission also experimented the use of mobile phone technology during the voter registration confirmation process in the 2014 elections (The Nation, 2018). Despite these developments, the 2019 elections were characterized by systematic and widespread

irregularities and anomalies which, according to the country's Constitutional Court, eroded and compromised the integrity of the results (Jegwa, 2020). Loeber (2017, p.1) cautions that "an election in which technology is used requires a greater technical knowledge" otherwise the whole process may seriously be undermined hence raising serious governance issues (Schwartz & Grice 2013).

Cheeseman et al. (2018) argues that most scholars have paid too much attention on the value of electoral technologies but not adequately interrogated their effectiveness. They further argue that such technologies may actually render electoral processes even more vulnerable to rigging. A question therefore, arises as to how the EC has used technology to enhance the administration of elections in Malawi. Based on this, the researcher opines that there is need for more studies to be conducted to determine the relevance and applicability of technological applications in the management of elections in Malawi.

1.3 Research questions

For a better assessment and understanding on the use of technology in the administration of elections in Malawi, the study answers the following questions:

i. How has the use of ICT (e.g. computers, optical scanners, cameras, printers etc.) enhanced voter registration and verification processes in Malawi's elections?
ii. How has the country's Electoral Commission applied the use of technology in the management of general elections (and bye-elections)?
iii. To what extent has the use of ICT, and other relevant hardware and software, affected the credibility of the country's electoral processes?

iv. What risks were bred by the use of ICT in the elections credibility?

1.4 Main and specific research objectives

The main objective of the study is to determine the relevance and applicability of technology in the administration of elections in Malawi. Specifically, the study aims to:

i. Determine how the use of ICT (e.g. computers, optical scanners, cameras, printers etc.) has enhanced voter registration and verification processes in Malawi's May 2019 elections.
ii. Determine how the country's Electoral Commission has effectively applied the use of technology in the management of general elections (and bye-elections).
iii. Investigate how the use of ICT, have affected the credibility of the country's May 2019 electoral processes.
iv. Examine how the use of technology in elections would breed risks that may affect elections.

1.5 Purpose and significance of study

From the foregoing exposition of the research problem, the present study sought to determine how the use of technology has enhanced the administration of elections in Malawi. In other words, to what extent can it be argued that ICT enhances administration of elections? Malawi is one of the developing countries that embraced liberal democracy in the 1990s, and in order to have this deeply entrenched within the country's liberal democratic spectrum, conducting credible elections becomes paramount. In that context, this research envisages that the evidence that the present study would generate would support the drive towards the implementation of new technological innovations which, in the final analysis, would contribute to the

enhancement of electoral administration in Malawi. In addition, it is envisaged that the evidence, that would be generated, would contribute to the development of the requisite data corpus on the relevance and applicability of technological applications in the management of elections in Malawi.

1.6 Structure of the thesis

The thesis comprises five chapters. Chapter one introduces the study. It explains the background, objectives and the rationale for this study. Chapter two outlines a review of some of the relevant literature on the subject. It specifically reviews literature on elections and use of technology in the administration of elections in various countries. It further discusses the theoretical framework which anchors the study. Chapter three gives an overview of the methodology and research design. It also explains the sampling techniques, data collection instruments, and the analysis of data that the study employs. Chapter four presents and discusses the findings of this study. Finally, chapter five summarises the findings of the study and relates them to the theoretical framework outlined in chapter two.

1.7 Chapter summary

In this chapter, the general overview of the study has been presented, and this encompasses the study background, problem statement, research questions, study rationale and study objectives. It further presented the structure of this thesis. The main issue discussed in this chapter is the objective of the study which is to determine the relevance and applicability of technology in the administration of elections in Malawi. In the following chapter, a review of literature that is related to the present study is presented.

CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introduction

This chapter reviews literature on elections and use of technology for the enhancement of elections management in various geopolitical contexts. It further discusses selected theoretical approaches to help answer the research questions and objectives of the study. Various sources such as books, peer-reviewed articles, journals, and other publications have been reviewed to get information. The chapter is basically concerned with clarifying the basic concepts of elections and use of technology that are employed throughout the study. The chapter is guided by the following objectives and research question:

The main objective of the study is to determine the relevance and applicability of technology in the administration of elections in Malawi. Specifically, the study aims to:

i. Determine how the use of ICT (e.g. computers, optical scanners, cameras, printers etc.) has enhanced voter registration and verification processes in Malawi's May 2019 elections.
ii. Determine how the country's Electoral Commission has effectively applied the use of technology in the management of general elections (and bye-elections).
iii. Investigate how the use of ICT, have affected the credibility of the country's May 2019 electoral processes.
iv. Examine how the use of technology in elections would breed risks that may affect elections.

v. One of the key questions is “How has the use of ICT (e.g. computers, optical scanners, cameras, printers etc.) enhanced voter registration and verification processes in Malawi’s elections?”

2.2 ICT-Based Elections Management Systems

Various forms of technology have been adopted worldwide for the management of electoral processes. Technologies used for elections include familiar and older ones like printing presses, manual typewriters, electronic calculators and radios, or newer technologies like computers, optical scanners, digital mapping and the Internet (Loeber, 2017). The logistics of modern large-scale elections can be a considerable challenge for countries without access to technology (Lekorwe, 2006; ACE Electoral Knowledge Network, 2019). However, it has to be mentioned that the complexity level of technology used for the administration of elections around the world varies enormously. The rate of technological change is so high that EMBs must regularly re-evaluate their use of technology to determine whether they should adopt new or updated technology to improve their performance (Schwartz & Grice, 2013; ACE Electoral Knowledge Network, 2019).

According to the International Institute for Democracy and Electoral Assistance (IIDEA. 2018), the introduction of technology must be adapted to the level of development in the country in question and cannot resolve a deficit in confidence in the electoral system among or between stakeholders. For instance, even though it is often perceived as a silver bullet, biometric technology is costly and cannot resolve all the problems related to voter registration. However, in Mali, the challenges related to establishing a voter register were resolved through the implementation of technological

applications that enhanced the institution of a reliable civil registration system, among others (IIDEA, 2018). The initiated technological applications led to the modernization of the civil registration database through the implementation of a unique identification, "the Numéro d'Identification Nationale (NINA) card". Other notable technological applications included the development of a biometric file that contained a photograph and the digitalized fingerprints of all voters (IIDEA, 2018). Despite some perceived weaknesses in relation to security, deterioration and even data capture errors, the NINA card helped to enhance the credibility of elections. Thus, biometric data contributed to an improvement in several elements of the electoral process, most notably the eradication of duplicates from the register – as was evident in Somaliland prior to the institutionalization of technological application in their electoral processes (Juma, 2017) – and compliance with the maximum number of voters per polling station (IIDEA, 2018).

Over the past decade, new technologies have been playing an integral role in the organization of an increasing number of elections around the world (Loeber 2017; European Commission and UNDP, 2012; IIDEA, 2017). A number of countries have turned to a variety of technological solutions in a bid to make elections more efficient and more cost effective, and to strengthen stakeholder trust in each stage of the electoral cycle. Solutions range from the use of geographic information systems to conduct boundary delimitation and establish the location of polling stations to the use of sophisticated databases to maintain the voter registers, mobile technology for the transmission of election results or electronic voting machines to enable citizens to cast their ballots (Schwartz & Grice 2013; European Commission and UNDP, 2012; IIDEA, 2018). In particular, biometric technology now plays a significant role in a number of

electoral processes around the world, such as voter registration and the identification of prospective voters at the polling station on election day.

The introduction of information and communications technologies (ICTs) into the electoral process is generating both interest and concern among voters and practitioners across the globe (Loeber, 2017; IIDEA 2018) and ACE Electoral Knowledge Network 2019). Technology has undoubtedly helped electoral management bodies to make their processes more efficient. Increased Internet penetration — even in developing countries with poor communications infrastructure — is enabling the electoral management bodies to be more effective at communicating internally and with all the stakeholders involved in the process. Technology thus plays an increased role in enhancing the integrity of electoral processes, and strengthening trust between stakeholders.

2.2.1 Use of ICT (e.g. computers, optical scanners, cameras, printers etc.) in enhancing voter registration and verification processes in elections in various geopolitical contexts

The use of biometric technology in voter registration has enabled electoral management bodies to improve the accuracy of voter registers by providing an effective mechanism for identifying duplicate entries on the voter register (Loeber 2017; IIDEA, 2018). Thus, the use of biometric technology to verify voters' identities on election day has also contributed to enhanced trust in the electoral process. Similarly, technology is providing electoral management bodies with ways to effectively count, tabulate and transmit the results of elections more quickly through measures such as electronic voting or transferring election data through mobile technology (IIDEA, 2018). IIDEA (2018) posits that this enables election results to be announced sooner, which can diffuse tension in closely contested elections and strengthen trust in the process.

Research suggest that, despite its cost, biometric technology can be a worthwhile economic investment for a country even if it only decreases the likelihood of serious post-election violence by a few percentage points.

According to the European Parliamentary Research Service (EPRS) (2018), accurate voter registers are vital in enabling all eligible persons to exercise their right to vote and eliminating fraud. Digital technology considerably facilitates the process of creating registers and most European Union (EU) countries extract data from population registers to generate an electoral roll. In countries where electoral rolls are created from scratch, technology can also help in the creation of voters register. For example, voters register in Australia via an online form, whereas Tanzanians fill out a machine-readable paper form that is then fed into a scanner (EPRS, 2018). However, the difficulty of updating and cross-checking paper-based electoral rolls heightens the risk of including deceased voters or multiple records of the same person, creating opportunities for electoral fraud (IIDEA, 2018; EPRS, 2018).

By contrast, digital registers are more manageable. Creating accurate voter registers is particularly difficult in countries where citizens lack identification documents – as many as 40% of those eligible to vote in low-income countries (EPRS, 2018). The lack of a reliable method of checking identity allows many people to register more than once – in the Democratic Republic of the Congo (DRC), over 700 000 persons (1% of the total population) were found to have done so ahead of the 2011 elections (EPRS, 2018). To prevent this, 45 countries (mostly in Africa) use fingerprint scanning. Paradoxically, some of the least developed countries in the world have become leaders in the use of biometric technology in elections, precisely because of the lack of reliable identity

documents and population registers – a good example is Somaliland, which used iris scanning during the 2017 presidential elections (EPRS, 2018; The Conversation, 2019). Somaliland's thus became the first elections in the world in which voters were identified by iris scanning when registering to vote. The system was developed to eliminate multiple voting – a major problem in previous Somaliland elections (The Conversation, 2019). This position is elucidated in Ayeni and Esan (2018) that the introduction of Electronic Voters Register (EVR), Automatic Fingerprints Identification System (AFIS) and Smart Card Reader (SCR) in elections management reduce the incidence of multiple registration and multiple voting to the barest minimum. They conducted a study to examine the impact of technological applications in the management of elections in Nigeria. According to Ayeni and Esan (2018), the development of e-collation support platform drastically reduced the incidence of result manipulation at collation centres. Ayeni and Esan (2018) therefore contend that the incorporation of ICTs in the Nigerian electoral processes reduced excessive electoral fraud to the barest minimum and, in the process, helped foster credibility in elections.

Ayeni and Esan (2018) also observe that, as years passed by, INEC got more sophisticated with its technologies. For example, with the registration of voters, INEC started with the collation of only basic details of voters in 1999. In 2003, INEC added finger prints which were done on paper forms. INEC went fully electronic in 2006 with the introduction of biometrics - pictures and fingerprints - which gave birth to the popular Electronic Voters Register (EVR). In 2011, INEC introduced AFIS to detect and to minimize cases of multiple registrations. In 2015, an improved AFIS was further used to clean the electoral register. Business rule was also applied in 2015 which allowed for the capture of minimum of two fingers as the criteria for inclusion of any

voter in the electronic register. It is believed that with the use of a licensed AFIS, INEC would be able to eradicate or reduce to the barest minimum cases of multiple registrations (Ayeni & Esan, 2018).

In a study that was conducted to explore the circumstances that warranted the use of the smart card reader (SCR), the polemics surrounding its use, its performance during the 2015 presidential election in Nigeria, as well as its potential for future elections (Agbu, 2015), it was observed that the arrival of permanent voter's cards (PVCs) and the smart card readers (SCRs), as technological inputs in the Nigerian electoral space, made it extremely difficult for elections results to be manipulated, either by anonymous individuals or through arbitrarily and fraudulently manipulating figures.

During the 2013 Kenyan elections, Odhiambo (2013) notes that the Independent Elections and Boundaries Commission (IEBC) enhanced the initial steps toward technological electoral integration by adopting biometric voter registration (BVR) system, among other processes. The IEBC also introduced electronic identification of voters and electronic transmission of electoral results (Odhiambo, 2013). However, the integration of ICTs in elections did not cover the full aspects of election operation – thus there was a hybrid use of human activity and technological integration (Odhiambo, 2013). This was particularly the case because the standards of transparency and accountability required in elections necessitate significant elements of human scrutiny, apart from depending on technological applications embedded in the electoral processes. Odhiambo (2013) conducted his study to determine the correlation between the legal and institutional framework for managing elections in Kenya.

According to Juma (2017), Somaliland's current shift to the application of advanced voting technology emerged from a lack of trust because of problems with the 2008 elections. For instance, names were duplicated in the manual voter register because of pressure from local elders. These fraudulent activities and other logistical issues threatened to undermine Somaliland's good standing in the international community. This motivated stakeholders to embrace the requisite technological shift in the management of elections in Somaliland. Thus, technology was primarily embraced as a leeway to avoid some of the challenges that became prominent with the use of manual elections management systems.

Apart from the use of PVCs and SCRs in the Nigerian electoral space, Agbu (2015) observes that permutations of ICT in electoral processes, such as e-voting, its adoption and diffusion, could lead to significant improvement in democratic practices in various democracies around the globe. According to Agbu (2015), and Ahmada et al. (2015), this phenomenon profoundly influenced Nigerian policy-makers to explore the viability of adopting e-voting in their public elections. As observed by Levan and Ukata (2012), there are various factors that are bound to challenge the performance of the traditional paper ballot system of elections in Nigeria, and these include the difficult topographical terrain of some communities in Nigeria, the movement of both the electorate and electoral officials as well as election materials to polling units and collation centers, and the tallying and collation of results. Moreover, communicating election results using traditional means of transportation expose the results to numerous risks such as attack by political thugs, aggrieved party members, or manipulation by corrupt officials (Agbu, 2015). These constraining factors question the continued use of the traditional

paper ballot system and therefore open up a window for the e-voting options (Jega & Hillier, 2012).

In some study that was conducted to examine electronic-voting, in the Nigeria elections, as an improvement on the traditional paper voting with a focus on Owerri Senatorial Zone, Imo State (Olusadum & Anulika, 2018), it was observed that e-voting reduced the incidences of election fraud especially in the areas of voting and counting of votes. One of the recommendations the study made was that INEC should capitalize on the flourishing ICT industry to fight endemic electoral irregularities in Nigeria. Olusadum and Anulika (2018) also recommended the institutionalization of relevant legal frameworks and structures that will formidably support the practice of e-voting in Owerri senatorial zone, in particular, and Nigeria in general. , The application and use of Electronic voting machines led to a significant decline in electoral fraud, particularly in politically sensitive states which were subjected to frequent re-polls due to electoral rigging (Shamika, et al., 2017). This study which was carried out to investigate the impact of the phased roll out of the electronic voting machines point out that the use of EVMs made the electoral process more competitive whereby the winning margin and the vote share of the winning party declined.

2.2.2 Challenges of ICT-Based election management systems

Cheeseman et al. (2018) observe that the growing use of electoral technologies has been driven by the fetishization of technology rather than by rigorous assessment of their effectiveness; that they may create significant opportunities for corruption that, among other things, vitiate their potential impact; and that they carry significant opportunity costs. This is the case precisely because new technology tends to deflect attention away

from more “traditional” strategies, the failure of digital checks and balances often renders an electoral process even more vulnerable to cyberattacks and rigging, for example, than before. Thus, without effectively developing a proper checks and balances structure on the electoral technological applications Cheeseman, et al. (2018) contend that the credibility of the electoral processes would be affected. Such checks and balances could be provided by instituting rigorous auditing processes to verify the credibility of elections, as was the case in Malawi’s tripartite elections in 2019 (Walubengo, 2019). Despite the rigorous vote audits, the country’s elections were characterized by widespread irregularities that led to the nullification of the poll result, by the country’s Constitutional Court, to pave way for fresh elections that will be held in May 2020 (Jegwa, 2019).

During the 2016 presidential election in the United States, for example, the election infrastructure was targeted by a foreign government (Musgrave, 2016; Zeitz, 2016; National Academies of Sciences, Engineering and Medicine, 2018). According to assessments by members of the US Intelligence Community, actors sponsored by the Russian government obtained and maintained access to elements of multiple US state or local electoral boards. Thus, the vulnerability of the election systems to cyberattacks became a growing concern during the campaign leading up to the 2016 presidential election (National Academies of Sciences, Engineering and Medicine, 2018). It is understood that this compromised the ability of the US elections managers to effectively use the available technologies (e.g. voting equipment, electronic poll books, election management systems and other hardware and software) designed to serve voters and election administrators (National Academies of Science, Engineering and Medicine, 2018).

Azerbaijan's case reflects that lack of electoral administration independence (Cheeseman & Klaas, 2018). In that country's 2013 elections, for example, when the highly repressive government of President Ilham Aliyev sought to boost its democratic credentials by launching an iPhone application that would enable citizens to keep up to speed with the vote tallies as ballot counting took place, it turned out that the use of technology was an attempt to subvert electoral justice and strengthen President Ilham Aliyev's hegemonic stay in power (Cheeseman & Klaas, 2018). Those that were interested in trying out the new technology discovered that the application had been loaded with election results the day before polls opened.

The institutionalization of partial risk-management solutions, among other interventions, which involves tools and procedures applied to specific areas of an electoral management body's work, would be seen in the use of ICTs in Estonia, where a special IT-centred risk-management system had been in use, and in the security aspects of electoral processes in Guatemala (ACE Electoral Knowledge Network, 2019), where contingency and security plans have been prepared for each area and emergency. Thus, the Estonian and Guatemalan cases are an attempt to effectively factor in mechanisms that would help in reducing, or eliminating, the electoral integrity-related risks emanating from the use of technology in elections.

2.2.3 How the use of ICTs has enhanced the credibility of the electoral processes in diverse geopolitical contexts

The correlation between the legal and institutional framework for managing elections and its impact during the 2013 Kenyan elections (Odhiambo, 2013), was observed that the IEBC should sustain and enhance the use of technology in electoral administration

based on premise that this would eliminate the prevalence of human error, improve efficiency, increase verifiability and integrity of the elections operations. In the 2010 referendum, the IEBC integrated technology in the electronic transmission of electoral results and used Optical Marker Readable Forms for voter registration. In addition, the IEBC conducted a pilot of Biometric Voter Registration (BVR) in selected constituencies throughout Kenya. The incorporation of technology into Kenya's electoral processes enhanced voter confidence in the electoral system which, in turn, could be the platform for enhancing the credibility of the country's electoral processes Odhiambo (2013).

Digital technologies are increasingly used in elections around the world. Where the resources and capacity of the state are limited, such technologies make it possible to rapidly "leapfrog" to cleaner and more credible elections (Cheeseman, Lynch & Willis, 2018). Cheeseman et al. (2018) further observes that the growing use of these technologies has been driven by the fetishization of technology rather than by rigorous assessment of their effectiveness; that they may create significant opportunities for corruption that (among other things) vitiate their potential impact; and that they carry significant opportunity costs. This is the case precisely because new technology tends to deflect attention away from more "traditional" strategies, the failure of digital checks and balances often renders an electoral process even more vulnerable to cyberattacks and rigging than before. This could best be demonstrated by the case of Azerbaijan. During the country's 2013 elections, the highly repressive government of President Ilham Aliyev sought to boost its democratic credentials by launching an iPhone app that enabled citizens to keep up to speed with the vote tallies as ballot counting took place (Cheeseman & Klaas, 2018). Touting its commitment to transparency, the regime

said that the new technology would allow anyone to watch the results in real time. But those who were keen to try out the new technology were surprised to find that they could see the results on the technological application the day before the polls actually opened. In other words, anyone with the application could see who had won, who had lost, and by how much, before any ballots had even been cast.

These observations, however, are not intended as a manifesto against the digitization of elections but to draw the attention of all the critical stakeholders in the electoral processes to a careful assessment of the problems, as well as the benefits, of such technologies (Cheeseman, et al., 2018). Cheeseman, et al. (2018) critically demonstrate how the institutionalization of digital electoral processes can render elections less transparent. Their critique was premised on the fact that there has been a remarkable uptake in the deployment of digital technologies in elections over the last two decades – a trend that is clearest in Africa and Asia. In Africa alone, roughly half of all national level elections now involve digital equipment of some form, most notably biometric voter registration and identification and electronic results transmission (Cheeseman, et al., 2018).

The democratization of politics in most post-colonial formations like Nigeria has not been successful in terms of reducing the incidence of voter intimidation, ballot box snatching and stuffing, multiple voting, falsification of results and other associated electoral malfeasance. In their qualitative study to investigate the role of the card reader in improving the credibility of the 2015 General Elections in Nigeria, they observe that the institutionalization of various technological applications, including the digitalized card reader, rekindled the confidence of most Nigerian voters and international partners.

Consequently, they posited that e-voting should be adopted as a tool for curbing electoral fraud in Nigerian elections. The institutionalization of e-voting in Nigeria was premised on the understanding that the country's electoral democracy was inseparable from monumental and brazen electoral manipulations which eroded voter confidence (Nwangwu, et al., 2018).

2.2.4 How the use of technology in elections has generated integrity-related risks that may affect the credibility of elections

According to Alihodzic (2017), the use of ICTs in elections has helped in the creation of accurate voter registers, simplified voting and result tallying, faster transmission of election results, among other benefits. However, Allihodzic notes that the practice has proven that the introduction of ICTs comes with some risks, such as malfunctioning of equipment, the contested integrity of machines, or exposure to hacking. There is thus another aspect of the application of digital technologies in elections which, although important for successful elections, does not attract as much spotlight - namely, the power of ICTs to store, compute, and visualize vast amounts of data is becoming increasingly critical in providing electoral management bodies with the situational awareness needed for effective management of electoral risks.

Regardless of where elections take place, election management bodies face numerous risks in organizing them. These, among other things, relate to the introduction of ICTs and ensuring safety of participants and credibility of results (IIDEA, 2018; Allihodzic, 2019). When such risks materialize, the consequences may be serious and neither well-established nor transitional democracies are immune to it. There are many instances in

which electoral events have triggered deep political crises, tensions, and violence just as was the case with the 2007 Kenya elections.

Thus, prevention and mitigation of electoral risks are challenging tasks and electoral management bodies are increasingly embracing and institutionalizing risk management practices. One important aspect of this is the building of internal capacity to systematically measure and analyze multiple risks throughout the entire electoral cycle (IIDEA, 2018). However, because of the complex nature of electoral processes – multiplicity of actors, number and scope of events undertaken, among other things. The amount of information that electoral management bodies generate and receive from their regional and field staff, other government agencies, political subjects, civil society organizations citizens is often hard to comprehend.

Risk management systems that utilize digital technologies are able to ensure that different pieces of data are collected within an institution in order to create a holistic picture (Alihodzic, 2017). This is instrumental in detecting risks that materialize at early stage, so that action can be taken to prevent and mitigate negative impacts. For example, IIDEA's Electoral Risk Management Tool (ERM Tool) is a desktop software application that combines several digital technologies (databases and geographical information system (GIS) to enable users to systematically identify risk factors, upload data in different digital formats, generate geographical risk maps and charts, and establish and maintain a risk and action register (IIDEA, 2016). Most importantly, analytical outputs – shared in the form of risk alerts that combine several layers of data while remaining easy to understand – can be developed quickly and shared with key risk owners for their attention and action (Alihodzic, 2017). According to IIDEA

(2016), ERM Tool is currently the only digital electoral risk management instrument that is offered as a global public good – and is utilized in over 20 countries worldwide.

Thus, a preliminary literature scan shows that there is dearth of the requisite information on how Malawi's EC has exclusively used technological applications in the management of elections. Questions therefore arise as why the EC has not adopted relevant technological applications for all its elections management processes. Thus, based on the brief literature review, the researcher opines that there is need for more studies to be conducted to determine the relevance and applicability of advanced technological applications in the management of elections in the country. It is in that vein that the present study was conceptualized. In the present study, the researcher used the case study design to qualitatively determine the relevance and applicability of technology in the administration of elections in Malawi.

Malawi got its independence from Britain in 1964 and a few years later the country adopted a one-party system of governance. Under the leadership of Dr Kamuzu Banda, the country experienced a brutal dictatorial system which saw several people jailed or exiled. In 1994, Malawi adopted a multiparty system of governance and Bakili Muluzi became president after emerging as winner of the general elections held that year. The president is elected through universal direct suffrage every five years. The 2019 elections were the sixth since 1994.

In relation to the type of politics in Malawi, it is a presidential representative democratic republic, and the President head of state and government. The cabinet is appointed by

the President of the country. The judiciary is generally perceived as independent of the executive and the legislature.

All elections (presidential, parliamentary and local government) are run by the Malawi Electoral Commission. The independence of the commission is provided for in the Malawi constitution which states that the commission shall exercise its powers, functions and duties independent of any direction or interference by other authority or any person. In relation to organization, it is comprised of a Chairperson, who is a judge nominated by the Judicial Service Commission and at least six Commissioners appointed by the President in consultation with political parties represented in Parliament. These Commissioners have to be approved by the Public Appointments Committee of Parliament which also determines their conditions of Service. The Chairperson is appointed by the President on the recommendation of the Judicial Commission.

Apart from the constitution, some of the key electoral legislative pieces include:

a. Parliamentary and Presidential Elections Act (Chapter 2:01) (includes amendments to 1998).
b. Electoral Commission Act (Chapter 2:03) (includes amendments to 2010).
c. Local Government Elections Act (Chapter 2:01) (includes amendments to 1999).
d. Local Government Act, 1998
e. Local Government Amendment Act, 2017.
f. Political Parties Act, 2018.

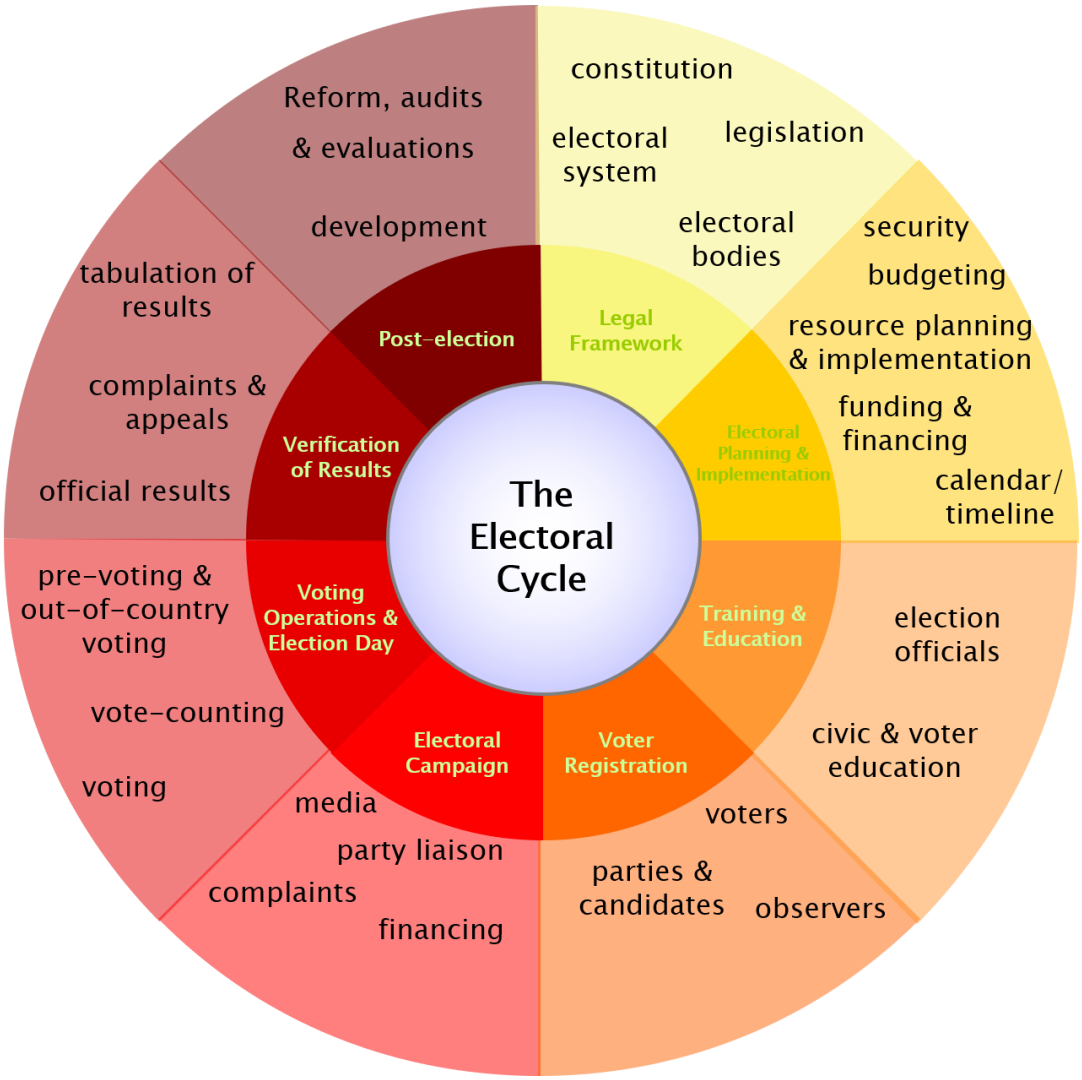
Technology is used synergistically in all periods of elections in Malawi. The Malawi Electoral Commission adopted they Electoral Cycle approach to elections. This process appreciates an election as a continuous activity rather than a once off event (ACE Electoral Knowledge Network, 2019). Electoral Cycle therefore is a visual planning and training tool designed to assist development agencies, electoral assistance providers and electoral officials…to understand the cyclic nature of the various challenges faced in electoral processes (ACE Electoral Knowledge Network, 2019). In view of this, technology is used in all electoral cycle stages but, in Malawi, the technology is mostly used during registration of voters and verification and or inspection of voters on the voters' register. Technology is also used during nomination of candidates and tabulation of results.

Basically, there is Pre-Electoral Period, Electoral Period and Post Electoral Period of the electoral Cycle.

In the Pre-Electoral period, this is where there is Legal Framework, Electoral Planning and implementation and Training and education and Registration of Voters. In the Electoral Period, there is Nomination of candidates, Campaign, Voting and Results Management whereas in Post Electoral Period, there is Review, Reforms and Strategy. (BRIDGE Project 2007, AEC, IDEA, IFES, UNEAD, UNDP). In all these periods, technology is used.

The diagram below is the Electoral Cycle with activities that happen at each stage in the electoral cycle.

Diagram 1: Electoral Cycle and How ICT is used



2.3 Theoretical framework: New Public Management (NPM) and E-government

This study is underpinned by the theory of New Public Management (NPM) which includes elements of E-government. The NPM theory represents the culmination of a revolution in public management that emerged in the 1980s. Rather than focusing on controlling bureaucracies and delivering services, public managers are now responding to the desires of ordinary citizens and politicians to be "the entrepreneurs of a new, leaner, and increasingly privatized government" (Denhardt & Denhardt, 2000). As such, the NPM is clearly linked to the notion of trust in economic rationalism through the creation of public value for public money. The NPM concept is centered on the proposition that a distinct activity-management can be applied to the public sector, as it has been applied in the private sector, and that it includes a number of elements that include the adoption of private sector management practices in the public sector, emphasis on efficiency; movement away from input controls, rules, and procedures toward output measurement and performance targets; preference for private ownership, contestable provision, and contracting out of public services as well as devolution of management control with improved reporting and monitoring mechanisms (Aucoin, 1990; Bale & Dale, 1998).

The basic foundation of the NPM is the use of the economic market as a model for political and administrative relationships (Hope, 2001). The institutional aspects of the NPM are heavily influenced by the assumptions of public choice theory, principal-agent theory, and transaction cost economics (Kaboolian, 1998). The NPM movement is driven to maximize productive and allocative efficiencies that are hampered by public agencies that are unresponsive to the demands of citizens and led by bureaucrats with the power and incentives to expand their administrative empires. In addition, the NPM

makes a rigid formal separation between policy-making and service delivery (Self, 1993; Kelly, 1998). It is used to describe a "management culture that emphasizes the centrality of the citizen or customer, as well as accountability for results" (Manning, 2000).

According to the Public Management Committee of the OECD (1995), and as summarized by Mathiasen (1999), the NPM is aimed at fostering a performance-oriented culture in a less centralized public sector and is characterized by many tenets. These tenets are:

i. Closer focus on results in terms of efficiency, effectiveness, and quality of service.
ii. The replacement of highly centralized, hierarchical structures by decentralized management environments where decisions on resource allocation and service delivery are made closer to the point of delivery, and which provide scope for feedback from clients and other interest groups.
iii. The flexibility to explore alternatives to direct public provision and regulation that might yield more cost-effective policy outcomes.
iv. Greater focus on efficiency in the services provided directly by the public sector, involving the establishment of productivity targets and the creation of competitive environments within and among public sector organizations.
v. The strengthening of strategic capacities at the centre to guide the evolution of the state and allow it to respond to external changes and diverse interests automatically, flexibly, and at least cost.

Adams and Smith (2008) argue that NPM is a management philosophy used by governments that encourages modernization and efficiency of the public sector. The main premise in the NPM reform movement is that more market orientation in the public sector will lead to greater cost efficiency for governments, without having negative side effects on other objectives and considerations (Dunn & Miller, 2006; Alam & Nour, 2012). The philosophy is to make the public system function equivalent to the private sector. This resonates well with our study as it intends to establish the usability of ICT in elections administration in the field where traditional manual and all paper based systems have been used. This theory is a catalyst for the revolution of the traditional methods of doing things.

In relation to e-government, there has been a rise in private sector corporations seeking to provide the public sector with their technological needs. NPM and e-government are oftentimes seen as two sides of the same coin, as they both seem to depart from the classic public administration paradigm (Homburg & Bekkers, 2005). Through the advent of e-government, private companies have taken a vested interest in marketing e-government to the public sector. In general terms, private sector companies assert their ability to offer the public sector technological solutions enhance efficiency, communication and ultimately satisfaction (Kalimullah, et al., 2012). This could be applied to the administration of elections in most geopolitical contexts.

Among other elements, the theory of New Public Management emphasizes the use of information technology in the operationalization of government business. Within the technology realm, the administrative concept of e-government may be applied by the legislature, judiciary, and other organs of the state in order to improve internal

efficiency, the delivery of public services, or processes of democratic governance (Aucoin, 1990; Bale & Dale, 1998; Adam & Smith, 2008).

E-government is often thought of as internet-based government. However, many non-internet electronic government technologies can be used in this context (Homburg & Bekker, 2005; Adam & Smith, 2008). indicate that some non-internet forms e-government technologies include telephone, fax, tracking systems, identity cards, smart cards and, polling station technology. The most important anticipated benefits of e-government, according to include improved efficiency, convenience, and better accessibility of public services (Adam & Smith, 2008).

In terms of relevance, the use of NPM theory within the provisions of the present study helped to highlight the need for EC to embrace the fundamental principles of e-government, through the adoption of the requisite technological applications, in order to improve internal efficiency, the delivery of public services, or processes of democratic governance. Therefore this study examined the extent to which this technology was adopted and whether it managed to achieved the intended objective with respect to achieving the aim of the ECs roles and activities efficiency and democratically, which in case of elections, should he free, fair and credible. The study also examined the manner in which the EC conducted the elections to find out if it acted as an organization that wanted to satisfy its customers who in this case were the citizens of Malawi and whether they treated the citizens and the politicians similarly. This study examined whether the EC set some benchmarks for which its citizens and politicians should would monitor and evaluate their activities as a means of performance appraisal in the course of their ICT-based system. The study also examined whether the EC was

innovative in their bid to satisfy the citizens' expectation. Furthermore, the study examined the ECs engagement in the decision making process to ensure that citizens needs and concerns are addressed. In this light, discussing the study findings, in light of the NPM theory, provided the researcher with the requisite theoretical disposition that helped him to effectively discuss the study findings within the provisions of the study's research questions and objectives.

2.4 Conclusion

In this chapter, literature related to the present study was reviewed. The chapter noted that the introduction of information and communications technologies (ICTs) into the electoral process is generating both interest and concern among voters and practitioners across the globe. The chapter has also highlighted that technology has undoubtedly helped electoral management bodies to make their processes more efficient. There are however some numerous challenges that are associated with introduction of ICT in electoral processes. The chapter has also discussed the theoretical framework used in this study, namely: NPM and E-government. NPM is a management philosophy used by governments that encourages modernization and efficiency of the public sector and E-government assists in achievement of this goal.

E-government technologies include telephone, fax, tracking systems, identity cards, smart cards and, polling station technology. The findings of this study are discussed being guided by this theoretical framework. The next chapter discusses the research methodology.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

In this chapter, the researcher gives an overview of the research methodology that characterized the present study. The chapter focuses on the research paradigm, research approach, research design, the study's population and the study's sample and sampling procedures. In addition, the data collection and analysis procedures that were employed are presented and discussed. Finally, a determination of the study's data trustworthiness and the study's ethical considerations has also been made.

As mentioned below, this study uses the qualitative approach. The qualitative research approach is more concerned with understanding social phenomena from the participants' perspectives. Thus, unlike quantitative researchers, qualitative researchers make context-bound summaries and generalizations in order to understand human behaviour.

3.2 Research approach

Planning of any research activity starts with the determination of the paradigm in which the study will be positioned which, in turn, affects the whole research process (Maxwell 2005; and Rubin and Babbie 2010). In the context of research, a paradigm is a belief system or world view that guides the researcher and the research process (Savin-Baden & Major, 2013).

Blaikie (2010), refers to a research paradigm as a set of major traditions in the natural and social sciences that incorporate particular ontological and epistemological assumptions which also includes one or more of the research strategies.

This study used a qualitative approach. Hence it was therefore based on the interpretivist or constructivist paradigm which postulates that there are multiple realities constructed by individuals or groups from their perspectives, and which are unique to their situations (McMillan & Schumacher, 2014). In constructivism, the researchers' professional decisions and perspectives are considered in the interpretation of data. Consistent with the interpretivist paradigm, this study sought to determine the relevance and applicability of technology in the administration of elections in Malawi, by highlighting the variant participant perspectives which are a reflection of the multiple social constructs of reality. The determination of the relevance and applicability of technology in the administration of elections, for example, could be a highly subjective process which would not align well with post-positivism, where researchers strive for objectivity in their determinations (McMillan & Schumacher, 2014). The present study therefore aligned well with the interpretivist or constructivist paradigm where the researcher's professional decisions and perspectives were instrumental in providing the overall research direction in answering the research questions.

Within constructivism, this study adopted a qualitative approach to determine the relevance and applicability of technology in the administration of elections in Malawi. The qualitative approach is based on constructivism which assumes that multiple realities are socially constructed through individual and collective perceptions of the same situation (McMillan & Schumacher, 2014). Such an approach provided an ideal

framework for understanding how various stakeholders interpret and understand the relevance and applicability of technology in the management of elections in a democracy. This allowed the researcher to understand the phenomenon under investigation from the participant's perspectives. According to Creswell (2012), McMillan and Schumacher (2014), and Savin-Baden and Major (2013), the qualitative research approach is more concerned with understanding social phenomena from the participants' perspectives. Thus, unlike quantitative researchers, qualitative researchers make context-bound summaries and generalizations in order to understand human behaviour. As indicated earlier, this is the framework in which participants interpret their thoughts, feelings and actions (Savin-Baden & Major, 2013).

3.3 Research design

Designing any study involves summarizing what the researcher intends to do from the hypothesis and definition of the study's operational inferences, for example, to the ultimate analysis of data (Blaike, 2010). This involves the presentation of the logical steps the study intends to take in order to coherently link the research questions to the processes of data collection, analysis and interpretation of the study findings (Blaikie, 2010; McMillan & Schumacher, 2014). This is done in order to provide the best responses to the stipulated research questions. In that light, this study was based on a case study research design to gain insights on how the use of technology has enhanced the administration of elections in Malawi. So, what does the use of the case study design entail?

Case study research examines one or a few cases over a duration of time using detailed, varied and extensive data, which are usually in qualitative form Neuman (2011.

McMillan and Schumacher (2014) argue that case studies examine “bounded systems”, or cases, over a specific period of time, and employs the many sources of data found in the settings. In both definitions, reference is made to a single case, but when a number of cases are combined in a single study, the investigation may be called a collective, multiple or multi-site case study (McMillan & Schumacher, 2010). This is collaborated by Creswell (2012), who states that case studies are characterized by extensive and varied data collection processes depending on the research questions and contexts.

This case study examined the process of elections within the framework of competitive politics in Malawi. This became central to the research in the exploration of how the use of technology has enhanced the management of elections in the country. The researcher’s choice of a case study design was premised on the fact that case studies provide an in-depth understanding of cases through the collection of multiple forms of data (Creswell, 2012). Case studies also provide valuable insights on specific themes or issues (McMillan & Schumacher, 2014). Malawi was selected as a case study because the annulment of the 2019 presidential elections was unprecedented (except for the case of Kenya) and the said electoral process significantly used ICT.

3.4 Population

The study population is a group of elements or cases, whether individuals, objects, or events, that conform to specific criteria, and from which a sample is drawn, and to which the researcher can generalize the study findings (McMillian, et al., 2014). Welman, Kruger and Mitchell (2005) and McMillan and Schumacher (2010) observe that this group that the researcher is interested in is called the target population. This is different from the population from which a smaller group of participants or sample is drawn (Welman, et al., 2005; McMillan & Schumacher, 2010).

Qualitative researchers select study participants and research sites which would provide sufficient and quality data related to the phenomenon under investigation (Welman, et al., 2005; McMillan & Schumacher, 2010). In the present study, the researcher used the case study design to determine how the use of technology has enhanced the administration of elections in the country. In terms of the study's population, the researcher focused on those stakeholders whose functions, among others, focus on elections management in the country. In this study, the population comprised election experts, members of political parties, the academia, members of the Electoral Commission, a selected number of International Non-Governmental Organizations (INGOs) and a selected number of Civil Society Organizations (CSOs). Inclusion criteria for the members in each of the stakeholder organizations were elected based on their expertise in elections management in Malawi during the 2019 and previous elections. The members were further recruited based on their role during the election's preparatory stages, voting day up to the results announcement day. All the other officers who were not directly involved in the stated activities were excluded from the study. The participants were recruited based on a register of all the people that represented each of the stakeholder groups. The people were then contacted to explain to them about the study and booking appointments with them based their convenience. Those that accepted to take part were then included on the list of Key Informant Interviewees (KII).

3.5 Sample and selection procedure of participants

A sample is a group of elements or cases from which data are collected and which is oftentimes representative of a specific population (Blaikie, 2010). McMillan and Schumacher (2014) note that sample selection is essential in research as it is virtually impossible to draw the requisite data from the whole population. The study employed

a non-probability sampling technique of purposive sampling to determine its sample. This is the selection of participants with homogenous characteristics and of interest to the researcher., homogeneous sampling is a variant of purposive sampling in which the researcher purposefully samples individuals or sites based on their membership in a sub-group that has defining characteristics (Creswell, 2005, 2012). Based on the researcher's knowledge of the population, a judgment was made, about the subjects who would provide the best information to address the purpose of the research.

The initial population sample comprised of people that are responsible for the administrative functions Malawi Electoral Commission, special-interest groups on governance (CSOs and INGOs), political parties officials that are represented in Malawi's Parliament (DPP, UDF, MCP, UTM and AFORD), witnesses in the 2019 Presidential election case, governance experts from academia and representatives of voters in the 2019 election in Chiradzulu. A sample of thirty three (33) people from the above listed groups was interviewed.

Using homogeneous sampling, the following groups of participants, and their attendant numbers, were sampled from the population (the numbers for each group was decided by the researcher after taking into considering the type of information required):

i. Three election experts from the Electoral Commission.
ii. Five politburo members of the five political parties (DPP, UDF, MCP, UTM and AFORD) represented in the country's parliament. (Parties outside parliament were deemed by the researcher not to be very influential in the electoral processes)
iii. Three commissioners of the country's Electoral Commission.

iv. Two governance experts from International Non-Governmental Organizations (INGOs) that deal with governance.

v. Two members from the Civil Society Organizations (CSOs).

vi. One elections legal expert from development partner

3.6 Methods of data collection

The research used documentation and semi- structured face-to-face interviews or focus group discussions (see Appendix 1 and2) to collect data, whichever was convenient.

3.6.1 Semi-structured face-to-face interviews and focus group discussion

The research used semi-structured face-to-face interviews and focus group discussion with the sampled participants in order to gather the requisite and study-specific data on how the use of technology has enhanced the administration of elections in Malawi. The use of semi-structured interviews and focus group discussion, allowed the researcher to collect requisite qualitative data which reflected the personal accounts and perceptions of the study participants in relation to phenomenon under investigation. Interviews, as data collection instrumentation, give researchers the flexibility to understand the participants' perspectives of the phenomenon being investigated. It also gives researchers the flexibility to ask follow-up questions in order to further explore a viewpoint. It also gives researchers an opportunity to open up to alternative explanations and answers to questions that were not established when the research questions were initially formulated. In addition, interviews provide researchers with an opportunity to motivate the participants and, hence, provide a much higher response rate, especially for topics that are highly sensitive in nature (Creswell, 2012; Newby, 2014).

Interviews allow the researcher to gain complex and in-depth information from the study participants and, in the process, provide a framework in which their variant perceptions of the world are discussed. Such a perspective cannot be covered by other methods of data collection (Savin-Baden, et al., 2013). Thus, within that context, the researcher probed and member-checked with the study participants to seek clarifications and elaborations on responses related to the phenomenon under investigation.

For this research, key informants interviews were used, which included three elections experts from the Electoral Commission, two governance experts from the academia, five political parties officials, two governance experts from INGOs that focus on governance and elections management as well as two members from the Civil Society Organizations on good governance.

All interviews were audio-recorded in order to ensure the accurate capture of information, which was later transcribed for analysis. The research triangulated the different sources of data in order to ensure that the study findings were credible and trustworthy. Triangulation helps the qualitative researchers have multiple data points which can broaden their understanding of the phenomenon under investigation (McMillan, et al., 2014; Savin-Baden et al., 2013). Creswell (2012) also pointed out that triangulation allows the researcher to corroborate evidence from different individuals in descriptions and themes.

3.7 Document analysis

Various documents on elections and use of technology in the administration of elections were reviewed. These documents included, among others, DBO audit report, situation reports on Malawi's electoral processes, the EC's Strategic Plan, EC's ICT strategies and guidelines, and Malawi's electoral laws. In addition, journal articles and text books were also analysed. The review of documents was meant to provide a thorough understanding of some key issues surrounding the area of study and in order to come up with relevant data regarding the topic under study.

Savin-Baden et al. (2013) note that documents provide researchers with a rich, and often readily accessible, source of information for understanding participants and the research contexts. In the same vein, Creswell (2012) states that documents, such as public and private records, are an important source of information in qualitative studies because they help researchers to understand participants and research sites.

3.8 Data analysis

Once data was collected, it was then analysed. Zikmund et al. (2010) refers to data analysis as the application of logic and reasoning to refine the collected data. The study used content analysis to analyse the data. Content Analysis basically refers to the study of all forms of recorded human communication by among other tasks focusing on who said what, to whom, how and why (Babbie, 2007, p. 320). It attempts to summarize comments into meaningful categories (Cummings & Worley, 2009). Content analysis often entails turning a large set of data into useable evidence through data reduction methods. Organizing the collected data by type: interview data, and document-based data. According to Creswell (2012), the organization of data is a critical process in

qualitative studies because the large amounts of information gathered during studies need to be effectively managed to allow for the extraction of the requisite data.

i. Reflecting on the audio-recorded interviews by making notes that correspond with the said reflections, immediately after the interviews.
ii. Transcribing the data verbatim immediately after the interviews, and placing additional comments in brackets in order to include all vital observations made. According to Creswell (2012), transcription is a critical process in data analysis which essentially entails the conversion of audio-recordings or field notes into text data.
iii. Reading over the data and open-coding the data.
iv. Continually comparing the codes and passages to those already coded to find consistencies and differences.
v. Examining consistencies or patterns between codes to reveal categories (this process was continued until all the data categories got "saturated" and no new codes related to the categories were identified).
vi. Determining which categories was the central focus (axial categories) in the analysis.
vii. Refining and upgrading categories and compiling a list of main ideas, words and phrases which, in the final analysis, contributed to the development of salient findings for this study.

According to Savin-Baden and Major (2013), the initial characterization of the collected data reflects what the researcher thinks are the salient elements in relation to the phenomenon under investigation. They further posit that data characterization is one of the first steps in qualitative data analysis. Thus, in the initial characterization

process of the data for the present study, the researcher made decisions about which features of the interviews to transcribe, and the level of detail to include in the transcribed data. In addition, the researcher also made decisions about the identification of relevant data segments from the document analysis evidence, and these helped buttress the study findings that were derived from the interviews. This provided insights into how the use of technology has been used to enhance the administration of elections in Malawi.

3.9 Trustworthiness

According to Lincoln and Guba (1985), as cited in Savin-Baden and Major (2013), any research process and its final output should be subjected to quality checks to ensure the study's trustworthiness. In quantitative research, the two common standards that are used for such a determination are validity and reliability. In general terms, validity is concerned with the accuracy of the study findings while reliability refers to the replicability of the study in other similar contexts or in the same context by other researchers (LeCompte & Goetz, 1982; Newby, 2014). In qualitative research, validity and reliability are conceptualized somehow differently based on their distinctive goals and procedures. In qualitative research, validity refers to the extent to which the study findings accurately describe the reality under investigation from the respondents' perspectives (Blaikie, 2010; Newby, 2014). In qualitative research, reliability is conceptualized with reference to whether the research process is consistent and reasonably stable over time and across researchers and methods (Savin-Baden & Major, 2013). However, in qualitative research, any references to validity and reliability are broadly termed as trustworthiness.

Academics in the field of qualitative research suggest the application of different standards to ensure the study's trustworthiness, thereby distancing themselves from the positivist tradition (Savin-Baden & Major, 2013). Lincoln and Guba (1985) developed four standards for establishing the trustworthiness of qualitative studies. These are credibility, transferability, dependability and confirmability. In the following sections, these standards are briefly discussed in relation to their application in the present multi-site case study.

3.9.1 Credibility

One of the critical standards addressed by positivist researchers is that of internal validity. In doing this, they seek to ensure that their studies measure or test what is actually intended (Blaikie, 2010; McMillan & Schumacher, 2010). According to Savin-Baden and Major (2013), the qualitative researcher's equivalent concept to internal validity is credibility, and deals with how congruent study findings are with reality. According to Savin-Baden and Major (2013), the term credibility implies that study findings represent some sense of reality and, in the qualitative researcher's case, the reality is the participants' reality. In the present study, the researcher achieved credibility through prolonged engagement in the research sites as a way of ensuring sufficient time for rapport development and understanding the culture of the research context. The researcher was in the field for 1.5 months and, during that period, the researcher built trust with the participants and comprehended the culture of the research context. The researcher also used the period for the selection of trustworthy evidence by assessing solicited versus unsolicited data, specific versus vague statements, and the accuracy of the sources. According to Savin-Baden and Major (2013), staying longer periods in the field allows qualitative researchers to gain optimum exposure to the

researched, and is one of the most important considerations for ensuring trustworthiness in qualitative studies. In the same light, McMillan and Schumacher (2014) observe that lengthy data collection periods in qualitative inquiry provide opportunities for preliminary data analyses, preliminary comparisons and corroboration to refine ideas and to ensure there is no dissonance between evidence-based categories and participant reality.

Secondly, the researcher triangulated the different sources of data in order to ensure that the findings from the study are credible and trustworthy. According to McMillan and Schumacher (2014) and Savin-Baden and Major (2013), triangulation means that the qualitative researchers have multiple data points which can broaden their understanding of the phenomenon under investigation. Creswell (2012) notes that triangulation allows the researcher to corroborate evidence from different individuals (e.g. election experts, members of political parties represented in the country's parliament etc.), different types of data (e.g. interview transcriptions and documentary evidence) or different methods of data collection (e.g. document analysis and interviews) in descriptions and themes. In this case, triangulation ensured that the study's research data drew on different sources of information and encouraged the researcher to develop a research report that is both accurate and credible.

In this study, the researcher also used member-checking as a validation process on the research data to lend credibility to the study findings. According to Savin-Baden and Major (2013), this strategy involves checking with the study participants for feedback or verification of interpretation. In this study, member-checking was done through casual conversations with the participants as well as through the probing process during

the in-depth face-to-face interviews. Savin-Baden and Major (2013) note that member-checking gives participants an opportunity to correct any possible misinterpretations made by the researcher during the face-to-face interviews. According to Creswell (2012), member-checking is a process in which a researcher asks one or more participants in a study to check the accuracy of the accounts that were initially obtained.

In order to minimize threats to credibility at the stage of data analysis, the researcher applied disciplined subjectivity in the interpretation of data to achieve the required results (Cohen, Manion & Morrison, 2003; McMillan & Schumacher, 2010). Thus, the researcher only made those claims that were sustained by the data.

3.9.2 Transferability

According to Savin-Baden and Major (2013), the readers of qualitative research can generalize specific study findings to their own contexts if they are convinced that the studies were carried out in similar contexts to their own. Thus, transferability, in this case, is the extent to which a particular study could be transferred to other settings (Savin-Baden & Major, 2013). This is only possible if the researcher provides adequate information about the initial research context, the research process, the research participants and the relationship between the researcher and the study participants. This, in the final analysis, would enable readers to effectively determine whether the study findings can be generalized to their respective contexts (Morrow, 2005; Savin-Baden & Major, 2013).

In order to meet the criterion of transferability, the researcher decided to include a thick description of the context of the study in the thesis write-up. This will provide readers

with sufficient information they would use to determine whether the study findings can be generalized to their respective research contexts.

3.9.3 Dependability

According to Savin-Baden and Major (2013), a study's dependability refers to whether the research process is consistent and reasonably stable over time and across researchers and methods. In qualitative studies, dependability is, thus, an instrument of maintaining quality and ensuring accurate representation of the phenomena under investigation. In order to enhance the study's dependability, the researcher should carefully document the research context, making clear the changes that occur while the research is ongoing. In the present study, the researcher presented detailed reporting and documentation of the research process (from the data collection phase to the data analysis and interpretation phases) in order to enhance the study's dependability. According to Yin (2009), a detailed reporting and documentation function enables other researchers to understand the methods used in the initial study and determine their effectiveness.

Finally, the researcher established an audit trail of all the data and materials that were gathered in the research process in order to enhance the study's dependability. The researcher established the audit trail to allow readers to be able to audit the events, influences and actions of the researcher in the course of the study. Audit trails are a way of assuring quality in qualitative studies (Koch, 2006; Akkerman, Admiral, Brekelmans & Oost, 2006).

3.9.4 Confirmability

According to Savin-Baden and Major (2013), confirmability is one of the dimensions of quality assurance in qualitative studies, and refers to the extent to which study findings can be validated by others. In that regard, confirmability assesses whether the data collected leads to reasonable conclusions without any prejudice (Lincoln & Guba, 1985). Thus, the construct of confirmability is based on the perspective that the integrity of study findings lies remains grounded in the data, and that the researcher must adequately tie together the data, the study's analytic processes and findings in such a way that the reader is able to confirm the adequacy of the findings.

Thus, in order to enhance confirmability of the study findings for this case study, the researcher triangulated the different sources of data in order to reduce the effects of researcher bias. In that regard, the researcher used semi-structured face-to-face interviews, and document analysis, as data collection instruments for triangulation purposes. As indicated earlier, triangulation is the process of corroborating evidence from different individuals, different types of data or different methods of data collection in descriptions and themes in qualitative research (Creswell, 2012).

In addition, the researcher incorporated a detailed methodological description to enable readers to determine how far the data and constructs emerging from the research processes could be accepted within the study specifications. Critical to this process is the audit trail which allows any observer or reader to trace the course of the study step-by-step through the decisions made and procedures described (Krefting, 1991; Hoepfl, 1997; Shenton, 2004; Koch, 2006; Akkerman et al., 2006).

3.10 Ethical considerations

3.10.1 Access

It is important for researchers to formally gain permission from the relevant authorities before entry into research sites (Creswell, 2012). After gaining access into the research sites, it is the researcher's responsibility to ensure that there are as little disturbances as possible to normal operational routine in the sites. In that regard, the researcher sought permission to conduct the study from relevant authorities at the Electoral Commission, the academia, political parties, CSOs and a selected number of INGOs.

3.10.2 Informed consent

According to Babbie (2010), the ethical norms of voluntary participation and no-harm to participants have become formalized in the concept of "informed consent". Babbie (2010) observes that participants must base their voluntary participation in research projects on a full understanding of the possible risks involved, among other considerations. In the context of the present study, all participants were given a detailed presentation of the study in order to ensure they had a full understanding of the study's research processes. In addition, all participants were informed that their participation in the study would be voluntary and that they would be free to opt out at any point, if they felt uncomfortable with their continued participation.

In the present study, the researcher also explained to all the participants that no penalties would be imposed on them as a result of their withdrawal from the study. In addition, all participants were assured an opportunity to go through the study findings in order for them to determine if the findings reflected what was said.

3.10.3 Confidentiality and anonymity

According to Babbie (2010), the concern of any researcher in the protection of the subjects' interests and well-being is the protection of their identity. In that regard, Creswell (2012) notes that maintaining confidentiality in research is one way of ensuring ethical research practice. All concerned parties in the present study were thus informed that the collected data would be used for the purposes of this study, and no data would be used for purposes other than what was mentioned to them. They were also informed that access to the participants' characteristics, responses, behaviours and other information would only be restricted to the researcher. All participants were assured that their participation in the study would remain anonymous, and that all the information that the researcher would collect would be treated with utmost confidentiality and care.

3.10.4 Betrayal, deception and harm

According to Miles and Huberman (1994), betrayal and deception have implications on the study findings. When the participants perceive betrayal and deception in the presentation of the study findings, it becomes impossible for them to accept it as a reasonable interpretation of what actually happened. As such, the researcher conducted this study without any elements of deception, betrayal or harm which, it is understood, would negatively affect the study participants in some way. The researcher conducted the study with tact, honesty, sensitivity, dignity and respect for the protection of the privacy of the participants.

3.11 Study limitations

This study was confined to the operational spectrum of Malawi's EC. The study thus focused on a selected number of international and regional elections-focused organizations present in Malawi. Thus, based on input from relevant authorities at the EC, and other stakeholders, the researcher made the critical determination as to which individuals would provide sufficient and quality data related to the phenomenon under investigation.

The researcher faced a number of limitations in the process of conducting the study. The first limitation was difficulties to secure appointments to interview the political parties' officials and CSO due to their busy schedules. The other challenge was the timing of the study. The study was conducted at a time when there were post-election violence followed by the COVID-19 disease pandemic. Issues of elections were sensitive and as such some respondents were not free to give information on election related issues. This development had the potential of leading to the provision of wrong information that may affect the quality of the study. In some cases also some targeted respondents refused to be interviewed for their own personal reasons. In such cases, efforts were made to identify other respondents in the same category. Time and resources constraint were also some of the challenges in the sense that it restricted your number of interviewees.

Since the study relied on qualitative approach, it is possible that some elements may have been well captured using a mixed approach. Using one approach may therefore, to some extent, be one of the limitations.

3.12 Chapter summary

This study used a qualitative approach hence it was based on the interpretivist or constructivist paradigm which postulates that there are multiple realities constructed by individuals or groups. This was within the context of a case study design at Electoral Commission of Malawi in order to determine how the use of technology has enhanced the administration of elections in Malawi. The population comprised election experts, members of political parties, the academia, members of the Electoral Commission, a selected number of International Non-Governmental Organizations (INGOs) and a selected number of Civil Society Organizations (CSOs). Multiple processes were applied in order to ensure that data collection followed the prescribed ethical principles.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.1 Introduction

This chapter presents an analysis and discussion of the study findings derived from the data that was gathered for the purposes of the present study. The data is presented, analyzed and discussed in line with the semi-structured interview schedule which was the primary data collection instrument for the study. The chapter discusses how the use of ICT has enhanced voter registration and verification processes in Malawi's elections, with emphasis to the 2019 Tripartite Elections. The chapter also examines how the use of technology in elections breeds risks and how that may affect elections. The chapter has been structured in a way that that findings of each objective are presented separately. After the presentation of the findings for each, an analysis and explanations in trying to justify the findings in conformity with the available literature and theoretical frameworks that informs this study.

4.2 Use of ICT and its effect on voter registration and verification processes in Malawi's elections

The use of ICT in the management of voter registration and verification dealt with so many challenges that were experienced during an entirely paper-based election management system. In this ICT-based EMS, the registration process was managed by the biometric voter registration system.

It was reported that voter registration was characterised by several challenges before the ICT system was adopted. For example, voter registration was characterised by duplications of voters' information, missing names, distortions of information, spelling errors and other information errors, missing photos for the voters and transposition of photos of applicants. It was also reported that voter registration was characterised by double work for the electoral commission officials since they had to redo much of the work they did in the field at the office. Furthermore, paper based system made the job of locating people on the register very challenging since sometimes, names were arranged in an alphabetical order and sometimes even when arranged in alphabetical way, surnames could be reported as first names and vice versa, which also brought in challenges during the locating exercise of the voters on the voter roll. These factors affected the accuracy of the register and confidence of the voters in the election process. EC official explained this as follows:

> '……*Voter confidence is affected like when a person goes to voting or registration centre and finds that the name is missing they get frustrated. The name might be there but because of lack of order or mistakes, it may not be located. Then confidence level drops for such election*….'.
> [EC official].

But with the introduction of ICT-based election management system (EMS), all these problems were solved at once. Although reports were there of some people with registration problems especially details, they were traced back to the data source, not the EMS for the electoral commission. This was the case because the EMS used the data extracted from the National Registration Bureaus (NRB) system, whereby only those eligible to vote were people whose details were extracted from the system. Therefore, all the problems that were reported hade to do with the mistakes made at the source, the NRB. Any other problems reported were to do with voters trying to engage

in fraudulent practices, which they failed to succeed. Therefore, the adoption of ICT improved the ECs implementation of the registration exercise as explained by EC official and Stakeholder:

> '*….So almost all problems with voter registration are eliminated….' '….Although there was no technology at polling centre, but we took printed documents of accurate registers from the computer as such there were no problems because a computer printed document from accurate source was used…'* [EC official].
> *'….for registration, at least as a voter, I saw the process in the past election to be faster than before….' '….individual identification, faster process than before….'* [Stakeholder].

The ICT-based EMS also reduced the chain of work to be done during the data capturing process, cutting jobs in the process as such making the system cheap. In the past their used to be Quality control manager who offered form quality control checks as well as camera operators during the registration process. The use of biometric voter registration system significantly reduced the total number of temporary staff from 200 to 20 at the ICT department at the Head Office thereby reducing the cost of election in the process. It also reduced the amount of time needed to do the registration of the voters as well as production of the voters register. Several EC officials explained this as follows:

> *'….It was time consuming to clean the data to come up with cleaner register….'* [EC official].
> *'….ICT reduced workload involved since the ICT-based EMS involves uploading of data only. It removed the redundancy of work that was there with the manual system, since we captured the data in the field and repeated all the work at the office again….'*[EC official].

In case of voters, there was good feedback received by the EC and most of the people were happy with technology use in registration and inspection process because they did not spend much time in the registration and inspection centres.

Slight challenges were met with the ICT-based EMS during the voter inspection which was found to be problematic due to limited gadgets. So the EC was not able to roll it out at once the whole country. The use of *720# was rollout to complement the voter inspection exercise, which helped people to verify their registration online using the phones. But challenge was that it was opened late and people did not have enough time to use the facility and those that did not have phones could not use it. So in future it has to be opened earlier to give people enough time. Power issues also affected the voter verification exercise especially in remote areas. Even backup energy sources needed fuel, sometimes breaking up of equipment in the course of use or due to bad road terrain in some areas.

Another challenge was the registration approach. Initial plan for registration was to roll out at once throughout the country. But it was done in phases due to inadequate number of equipment, *'....we wanted to have equipment per registration centre, but didn't happen. This would have also enabled us to process data at polling centre/registration centre…'* [EC official].

These responses resonate with what Loeber (2017) and the Ace Electoral Knowledge Network (2019), said that there has been an increase in the use of different forms of technology in elections process globally as more and more countries use ICTs to try to improve their election processes. The results of this study show that Malawi has moved

steadily from all paper based registration of voters in the previous elections to the use of biometric voter registration. The results agree to the widely accepted practice reason for adopting ICT-based system that the adoption of relevant technological solutions is necessary to bring in the requisite efficiency (Kalimullah, et al., 2012).

According to Loeber (2017), the public sector turns to new ICT solutions in the election process for different reasons. Often, the introduction of ICT is seen as a necessary step in the fight against declining voter turnout and, in other cases, the improvement of the integrity of the voting process is mentioned. In addition, the speedy delivery of results might be a reason to introduce, for example, electronic counting of ballots.

According to the NPM theory, a public sector institution is supposed to adopt technology such as ICT in order to facilitate the solving of some of the challenges it faces as well as improving its efficiency and transparency. Indeed in the face of the adoption of the ITC-based EMS, the EC activity of voters' registration and verification improved significantly. When the EC, considered adopting this technology, they considered the customers (citizens) need of not spending a lot of time, which would in essence encourage more people to registers and verify their names. In that case they would reach out and get more customers patronizing their services, in the process getting closer to the targeted number of voters based on the national register. In this case, the EC also needed targets set as well as benchmarks for performance evaluation. Based on the documentation, their targets were set based on the number of people that had reached 18 years of age. And their efficiency in registration could be measured based on that benchmark. Therefore, the adoption of the NPM on the part f the registration was met. Furthermore, the EC gave options to its customers during the verification exercise where they could check their registration through a phone service

or by physically gong to the poling center. This might also ga e enhanced their efficiency and performance of the number of voters that confirmed and therefore ready to vote. Due to the ICT-based system, the EC also gave a chance of voters transfer from one place for voting to another. These also enhanced customers' chances of voting that also improved their efficiency.

4.3 Use and effectiveness of the voting machines and vote-counting technological applications in the management of general elections (and bye-elections)

The EC used technology in some parts of the EMS while in others it used the paper-based system. ICT was used in Registration, inspection, nomination and candidate management for production of ballots, results summation and transmission, civic education. However, this was much emphasised in the voter registration, candidate nomination and results management.

Apart from the registration and inspection of voters, ICT was also used during trainings, candidate nomination management, voter's transfers as well as vote or results tabulations and dissemination. In the 2019 tripartite election, data was entered at the constituency tally centre and transmitted through network at the main tally centre. While in the Fresh Presidential Election, data was entered at district level and transferred manually to the main tally centre where data was transferred through plug-in. The changes were made due to the challenges that were noted in the Constitutional Court ruling.

The ICT enabled the EC to be transmitting the voters' results for the general public to follow on their websites, which included scanned handwritten documents from which the data entered and transmitted was extracted.

The ICT-based system was used synergistically with the traditional paper-based system as a back up to the ITC-based system. So the ICT-based system did not entirely replace the paper-based system, but it just complemented the paper-based system. The ICT system according to EC official, produced very consistent data and results for the EC. This was said as follows:

> *'....Even in court case, although many people complained, but nobody produced different result…'* [EC official].
>
> *'....if considered from WhatsApp, for example, when monitors collect results, the same was quickly circulated via social media like WhatsApp and we followed real time….'* [Stakeholder].

The ICT based system also helped with the checks for the number of registered voters against the number of people that voted. When the EC received the results, it verified the total number of people that voted against those that registered in their system and they were able to find discrepancies where they occurred. A certain stakeholder comprehensively explained this as follows:

> *'....First of all, yes, I will look at the current election (2020), they did well because they had gone much to follow the laws and because they followed the law all what they were doing was systematically done using the ICT, in terms of tabulation, loading the results, verifying the results, but also using the same they managed to take their time in making sure that all constituencies, all the candidates, all the people that voted indeed voted.'* [Stakeholder].

This is in agreement with IIDEA (2018b), who opines that new technologies have been playing an integral role in the organization and management of elections around the

world. In particular, biometric technology now plays a significant role in a number of electoral processes around the world, such as voter registration and the identification of prospective voters at the polling station on election day (IIDEA, 2017).

The views of the respondent's point to relevance of technological applications, through the adoption and use of ICTs in the public sector. Thus, the main premise in the NPM reform movement is that the adoption of ICT infrastructure in the public sector will lead to greater cost efficiency for governments, without having negative side effects on other objectives and considerations (Dunn & Miller, 2006; Kalimullah et al., 2012). The use of the NPM theory, within the provisions of the present study, provided the theoretical basis for the Malawi Electoral Commission's adoption of relevant technological applications in the management of elections in Malawi.

The results show that NPM theory adoption has to be done carefully since, in this case, much as ICT-based EMS was adopted, and some challenges still persisted. The persistence was due to however the fact that the system was not wholly reformed. Some traditional practices were still maintained and are the ones that gave the ICT-based system challenges in its use. Therefore, ICT adoption should be carefully done since different setting require different solutions. Therefore, the solutions should be well studied before their adoption.

Some challenges faced with the ICT-based system were not necessarily system based, but they were just based on people's loss of confidence in the EC. It has been widely cited in the results that people did not have trust in the EC. This might be due to the fact that the EC did not engage and know its customer (citizens) very well. If you want to make a customer happy, you have to adjust the quality of your products or at least

persuade them why they should accept the standard given to their product. This might happen by engaging with your customers, or at least learning from them what they want or expect and the extent to which variation from their expectation can be tolerated.

So from the results, its shows that the EC did not do enough consultancies to improve their transparency, accountability and confidence of their customers. Therefore, consultations may be needed as early as possible to ensure that the customers follow all the progress and they know why a particular activity is taking place or is being initiated. This also gives the customers the benchmarks to which they should measure you (performance evaluations). There were many ways of doing the activities mentioned here, but they did not provide them to minimize the challenges that were faced such as the combined use of various technologies for voting, transmission and others, as it was done in the registration and verification. Furthermore, the adoption was not complete, meaning that some areas that had challenges during the paper-based system were left within the system, such as voting. These messed up the ICT-based system because they carried over their limitations to the current system, which made the system look bad by some quarters.

However, the incomplete adoption of the ICT-based system in all processes of the electoral process was attributed to many factors, which included cost some equipment and infrastructure necessary to support the successful implementation of such process as automated voting and summation as well as their associated security needs to ensure that the voters' choice is secured from tampering. Another factor is the large number of polling centers that may need a lot of equipment, which might be too expensive for the electoral commission or government funding it.

The Daily Times newspaper of 17 April, 2019 carried a story on the use of technology in elections. It stated that internet services in Malawi were expensive. The paper argued that despite Malawi to have achieved some strides in developing her technology, to some extent; the problem was that the technologies that were isolated in the sense that there was no political will to converge such efforts into one direction to enjoy economies of scale.

4.4 Use of ICT and its effect on the credibility of the country's electoral processes

Majority of Malawians showed that they did not understand how ICT-based EMS worked. ICT-based system was well understood and applauded by many Malawians during registration and inspection. But they did not understand how it worked all through from especially on the part of data transmission, results management but and dissemination. Firstly, the people doubted the security of the system alleging that it might have been hacked and that mysterious people managed the system, other than those designated by the EC, who were called ghost users. It was also apparent that even those some of those who studied ICT were did not understand how the system worked and were also sceptical about the system. This was evident form the court case and social media comments. As one respondent explained, *'*

> *.only transmission and approval components of the results management system introduced scepticism about the possibility of remote data manipulation through backend access to the system….' [EC staff].*

Yet the ICT personnel for the EC insisted that the system was secure and that it was worked well throughout the data transmission and tabulation process. One EC official said that *'….this is why no one produced any alternative results from the one we uploaded and displaced on our system….'* [EC official].

Based on the scepticism by the opposition parties people doubted the system as a scheme for use for rigging. This was done despite engaging various ICT experts of the political parties that participated in the elections. Furthermore, the EC also engaged members of the ICT association of Malawi as well as incorporating suggestions that were feasible. Still more, some members, may be engulfed with political orientation still were sceptical about the system despite not asking any queries during our presentations to them in the consultative meetings.

This was attributed to the lack of proper consultations with the stakeholders, where stakeholders cited lack of consultancy with them about the adoption of the system in the early stages as this would help them know the system requirements and needs to be done. Instead they were consulted or briefed when the system had already been developed, leading to a lot of ignorance on their part and building suspicions in the process. The lack of confidence in the ICT system was also bread by the lack of confidence in which the some leaders are selected there. So this lack of leadership confidence and the improper consultative process in ICT raised suspicions and this raised challenges on the people's confidence in the system. Some respondents explained this as follows:

> *'….. On that one since it's a secretariat issue, it is not shared to stakeholders and if we are part and parcel of how they do these things, probably we could have a say on how they could do such things. Unfortunately, as stakeholders, such information is not shared to us… but it could have been better at least to also share some of the things they are doing with the stakeholders, so we can help on where we can….'*[Stakeholder].

People knew how the ICT based system works well during the Constitutional Court sessions where the EC demonstrated how the system worked. This was evident during the Fresh Presidential elections whereby the same stakeholders that complained about the system, this time they applauded the system. In the tripartite election, they requested for every detail of the results, while this time around they only asked about summaries showing that they trusted the system. This was explained as follows: *'*

> *In results management, initially people were sceptical about it thinking we would play tricks using the computers. But after the first election people were very happy and this was because they now knew how the system works as opposed to what they were thinking it works…'*[EC official].

People also had negative attitude about learning computers then and they did not take an effort to learn how the system works, whilst sticking to their beliefs. According to the comment by one EC official, he said that they did not want to understand how it works in elections, hence they just held on to their belief that these things are used for rigging. Another official added that illiteracy levels made most Malawians not understand the system but party ICT gurus understood how it worked.

Based on interviews conducted, the results show that stakeholder consultations were a challenge in the way they were done and this raised trust and confidence issues in the stakeholders and since the stakeholders represent sections of people, the same fears are relayed to the general public, which makes the EC and its systems untrustworthy.

Although ICT was used in many parts of the EMS, it was not used in voting process. Many challenges that were faced with the election in Malawi were born by the paper component of the EMS such as vote counting (null and void, valid vote's determination)

as well as filling in of the results sheets. Just like in the registration phase, erroneous results on the results sheets could not be tampered with in the system.

Considering the observations on the selective use of technological applications by the Malawi Electoral Commission, it can be settled that such selectivity would not enhance the strategic capacities of those entrusted with electoral management roles and would breed inefficiencies in the electoral processes' continuum. Thus, the main premise in the NPM reform movement is that the adoption of an e-government fabric in the public sector will lead to greater cost efficiency for governments, without having negative side effects on other objectives and considerations (Dunn & Miller, 2006; Kalimullah, et al., 2012).

4.5 Use of technology in elections and emergence of their associated risks

The first risk noted was the use of borrowed equipment of the NRB, which brings many privacy issues for the voters because some of the information is not important for the voters registration. This point was well articulated by some stakeholders as follows:

> *'.....The EC does not its own registration equipment; they depend on the NRB machine which compromised the credibility of MEC because these two institutions are different in terms of what they do.* [Stakeholder].

The ICT based system uses NRB equipment most of which have outlived their lives so they breakdown often. This may affect the registration process if the same equipment is used again, disturbing the electoral calendar in the process. In addition, the use of ICT has restrictions on the identification for use during registration. Yet the law allows many forms of identity, which includes the use of traditional chief's letter of recognition. Yet the ICT system excludes such identifications because data entry using

them such as swiping cannot work. Therefore, this law was a little bit violated and somehow, no one raised it as an issue. Otherwise, it had a potential of discrediting the election process as it deprived some eligible citizens of their right to vote.

Poor internet coverage is another critical issue worthy discussing as one respondent explained:

> *'....One of the challenges to electoral administration in Malawi is the poor coverage by internet service providers for connectivity for transmission of data for both registration and polling. I think that is why the Electoral Commission selectively uses technology for some electoral processes* [Stakeholder].

The study reveals that complete institutionalization of technology throughout the electoral processes' continuum reflects the stipulations of the NPM theory which has provided the theoretical lens through which the present study's findings have been interpreted. As the NPM theory encourages modernization and efficiency, through the adoption and use of ICTs (Gruening, 2001), for example, it is envisaged that the application of the principles of the NPM theory to the reorientation of the public enterprises would lead to greater cost efficiency for governments (Dunn & Miller, 2006; Kalimullah et al., 2012). Thus, the use of ICTs and other technological applications in administrative and management processes (including electoral processes) aligns with the principles of e-government whose principal aim is to improve internal efficiency and the processes of democratic governance (Dunn & Miller, 2006; Kalimullah et al., 2012).

This could be a semblance of credibility in the electoral processes' continuum being enhanced by the institutionalization of technological applications. These arguments fit very well with the European Parliamentary Research Service (EPRS) (2018) where it is argued that digital technology brings greater efficiency in many domains of life,

including elections. For example, online databases hugely facilitate the task of creating and managing accurate and up-to-date electoral rolls, and in less developed countries, whose citizens often lack reliable identity documents, biometric technology can help to identify voters, thus preventing fraud in the form of multiple voting. Thus, technology would bring in some semblance of credibility in the electoral processes' continuum. From the study, it can be attested that Malawi has benefited from technology.

However, for some aspects of election management, digitization is more controversial. The intangible nature of digital processes makes detecting tampering and fraud more difficult and, as a result, most European countries are sticking to tried-and-trusted conventional paper ballots (EPRS, 2018). This would render digitization irrelevant and the conventional paper-based ballots credible, as reflected by the respondents who pointed out that technology has not enhanced the credibility of elections as evidenced by the lack of confidence and trust by the citizens and stakeholders working hand in hand with the EC like political parties that believed that it is being used for fraud, which led to a court case and eventual nullification of the results.. This probably explains why electronic vote-casting has been less universally adopted in developing democracies, where elections have often been marred by fraud, among other vices (EPRS, 2018).

From the foregoing, it is clear that the risks associated with digitization of elections would breed disapproval of the results and this could to lead to civil disturbances.
This would also mean that authorities would be reluctant to reintroduce technology in subsequent elections and, when this happens, the electoral process would be cumbersome as technology, by and large, brings efficiency and effectiveness. This is in line with Moynihan (2004), who said that the failure of electoral technologies (e.g. e-

voting) to deliver services, as expected, has profound consequences for the reliability of and public confidence in the electoral systems. The consequences of a failed election are much greater, and the adoption of electoral digitization increases that risk such that failure would occur.

Cheeseman et al. (2018) points out that the growing use of electoral technologies has been driven by the fetishization of technology rather than by rigorous assessment of their effectiveness. According to Cheeseman et al. (2018), the use of these technologies may create significant opportunities for corruption that vitiate their potential impact in addition to carrying significant opportunity costs. It is also observed that, as new electoral technologies tend to deflect attention away from more "traditional" strategies, the failure of digital checks and balances often renders electoral processes even more vulnerable to rigging.

In Kenya, for example, a nationally representative survey conducted by IPSOS in early October 2017 found that 58% of respondents agreed that elections that use digital technology are always more free and fair (Cheeseman et al., 2018). Despite the widespread use of digital technology in the presidential elections of 8th August 2017, the Supreme Court found the elections to be illegal, null and void. Such a scenario would mean the introduction of digital technology in subsequent elections would be scorned by the electorate as a ploy to rig elections, a reflected by some of the respondents to the study. In Kenya, unlike Malawi, their electoral laws are highly prescriptive on the use of technology. The Kenya Supreme Court nullified the Presidential Elections in 2017 on the basis of breach on the use of technology whereas the Constitutional Court in Malawi nullified the 2019 Presidential Elections based on

non-adherence to constitutional provisions which had nothing to do with the use of technology.

As indicated earlier, this study was underpinned by the NPM theory. Thus, in terms of relevance, the use of the NPM theory, within the provisions of the present study, provided the theoretical basis to study the EC's adoption of relevant technological applications in the management of elections in Malawi. This resonates with the fact that the use of ICTs and other technological applications in administrative and management processes (including electoral processes) aligns with the principles of e-government whose principal aim is to improve internal efficiency in the processes of democratic governance (Dunn & Miller, 2006; Kalimullah et al., 2012). The principles of the theory of treating citizens as customers also underpins the need to consult the citizens as well as their representatives widely from an early stage to avoid creating suspicions in the course of its work such as engaging consultants and adoption of some technologies. With proper communication at the right time in the right manner, issues related to doubt, trust as well as confidence and transparency needs may be dealt with amicably making the election free, fair and credible to all citizens and the observers. However, disclosure of information also poses a risk to the systems, there for there must be a balance between what is disclosable and not. Therefore, the formulation of an additional law on the extent of disclosure the commission can make could help to avoid abuse (hiding information for sinister purposes) of the phenomenon by the EC and the unscrupulous citizens or any other people (accessing crucial information for malpractices).

4.6 Chapter summary

In this chapter, qualitative data that were collected for the purpose of this study were presented, analyzed and discussed. The study's aim was to determine how the use of technology has enhanced the administration of elections in Malawi. This reflected the main research question and sub-research questions. In the process, document analysis data were used to buttress the findings that were derived from the interviews. To ensure trustworthiness and credibility of the study findings, triangulation of these data was employed to reduce the probability of reaching false conclusions.

Generally, the findings from the present study indicate that there is selective use of digitization in the electoral processes' continuum in the country. For example, digitization is evident during the processes of voter registration, voter details verification and transmission of poll results to collation centres. However, there is no electoral digitization during the voting and vote counting processes. Apart from the use of biometrics during voter registration, the study findings indicate that electronic voting machines have never been used in elections in the country.

In terms of risks associated with electoral digitization, participants observed that would breed disapproval of the results and this could to lead to civil disturbances. In that case, authorities would be coy to reintroduce electoral digitization in subsequent elections and, when this happens, the electoral process would be cumbersome as technology, by and large, brings efficiency and effectiveness. Participants also pointed out that the application of relevant technologies in the electoral processes' continuum would be a ploy by authorities to rig the elections.

The next chapter provides a summary of the study, draws conclusions and makes recommendations that can be adopted by authorities in order to enhance the use of technology in the administration of elections in Malawi. After making recommendations based on the study findings, the chapter makes recommendations for further research.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the conclusions drawn from the study findings and discussions as well as making recommendations on the conclusions made. It also highlights some limitations of the study and possible areas for further research. The study has analysed how the use of technology has enhanced the administration of elections in developing countries. The study was premised on qualitative method of data collecting and thereafter analysed it. The theory of new public management was prevalent and was the bedrock of the study.

5.2 Conclusions

The conclusion is being presented according to key issues that emerged from each objective.

Objective 1: Determine how the use of ICT (e.g. computers, optical scanners, cameras, printers etc.) has enhanced voter registration and verification processes in Malawi's May 2019 elections.

The ICT-based EMS reduced the chain of work to be done during the data capturing process, cutting jobs in the process as such making the system cheap. In the past their used to be Quality control manager who offered form quality control checks as well as camera operators during the registration process. The use of biometric voter registration system significantly reduced the total number of temporary staff from 200 to 20 at the ICT department at the Head Office thereby reducing the cost of election in the process.

Objective 2: Determine how the country's Electoral Commission has effectively applied the use of technology in the management of general elections (and bye-elections).

The ICT-based system was used synergistically with the traditional paper-based system as a back up to the ITC-based system. So the ICT-based system did not entirely replace the paper-based system, but it just complemented the paper-based system. The ICT system according to EC official, produced very consistent data and results for the EC. The ICT based system also helped with the checks for the number of registered voters against the number of people that voted. When the EC received the results, it verified the total number of people that voted against those that registered in their system and they were able to find discrepancies where they occurred

Objective 3: Investigate how the use of ICT, have affected the credibility of the country's May 2019 electoral processes.

Based on the scepticism by the opposition parties people doubted the system as a scheme for use for rigging. This was done despite engaging various ICT experts of the political parties that participated in the elections. Furthermore, the EC also engaged members of the ICT association of Malawi as well as incorporating suggestions that were feasible. This was attributed to the lack of proper consultations with the stakeholders, where stakeholders cited lack of consultancy with them about the adoption of the system in the early stages as this would help them know the system requirements and needs to be done. Instead they were consulted or briefed when the system had already been developed, leading to a lot of ignorance on their part and building suspicions in the process. The lack of confidence in the ICT system was also bread by the lack of confidence in which the some leaders are selected there. So this

lack of leadership confidence and the improper consultative process in ICT raised suspicions and this raised challenges on the people's confidence in the system.

Objective 4: Examine how the use of technology in elections would breed risks that may affect elections.

The ICT based system uses NRB equipment most of which have outlived their lives so they breakdown often. This may affect the registration process if the same equipment is used again, disturbing the electoral calendar in the process. In addition, the use of ICT has restrictions on the identification for use during registration. Yet the law allows many forms of identity, which includes the use of traditional chief's letter of recognition. Yet the ICT system excludes such identifications because data entry using them such as swiping cannot work.

5.3 Policy recommendations

Based on the findings derived from empirical research as discussed in Chapter 4, this study identified several recommendations as follows:

1. There EC should be given enough funds to ensure that it adopts the fully ICT-based EMS as well as buying new equipment and generating their own voters database. Or they should improve on the challenges faced with paper-based system parts if it is not possible to fully adopt the ICT-based system.
2. The legal framework should be revised to ensure that it stresses out that it is the national identity card only that can be used during registration of voters.
3. The EC should improve on its transparency drives as well as improve on stakeholder consultancy on the ICT-based system it is intending on adopting as well as giving the stakeholders a chance to monitor and evaluate their progress

to ensure that they win back the trust that has been over the years. The consultations should start way back to technology adoption level way through to its implementation.

4. The EC should ensure that there is widespread community sensitization for the stakeholders and the citizens to ensure that they understand the electoral process and the systems that would be used in the process and reasons for their adoption. This would give the stakeholders and citizens a chance to critique dispute any rumors that people may start to discredit and frustrate the electoral process. This might help the EC to end transparency worries and winning back the people trust and confidence.
5. The government should ensure that EC leadership is chosen according to the law in a manner that does not seem politicization of the institution.
6. The EC should invest in its staffs qualifications (structured tuition) and skills (short courses) to ensure that they have advanced technical know-how that would enable them to be at par with any citizens in their field of work. This would help them in making decisions that would be acceptable by their peers in their field as well as being able to defend their work options based on facts and standard practices.
7. Government also needs to invest in ICT infrastructure for access and affordability by citizens.

5.4 Research recommendation

Elections and political governance are strongly linked to each other, and as Loeber (2017) observes, when electoral technology is being used, there is even a very critical reason why the element of governance needs a more critical investigation.

Most electoral bodies tend to outsource the technology aspect hence raises the question of accountability. In other words, Loeber (2017:1) argues that in the context of electoral technology, very few scholars have asked: “who governs elections when technology is used”. This study did not examine the governance aspect hence it may be of importance in future studies if it is incorporated.

5.5 Chapter summary

In this chapter, conclusions were drawn from the results and discussions of the study. The conclusion summarized the discussions while the recommendations came up with the action points that the EC needs to do to improve on the achievements and failures of the ICT-based system.

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APPENDICES

Appendix 1: Demographic Data and Knowledge about the Electoral Process in Malawi

Questionnaire

Thank you for agreeing to take part in this study. Before the discussion / interview we would like to find out some background information to help us understand your answers.

Please tick the appropriate box (es) for each question.

Your answers will be kept confidential.

Personal Background:

1. Gender: ☐Male ☐Female

2. How old are you?
☐ Under 18 ☐ 18-20 ☐ 21-25 ☐ 26-35 ☐ 36-45 ☐ 46-55 ☐ over 55

3. What was/is your role in the elections process?

☐ EC staff ☐ party representative ☐ temporary poling day staff

☐ stakeholder ☐ Prefer not to say ☐ Other (Specify)

4. What is the highest level of formal education you have received?

☐ None ☐ Primary school ☐ High School ☐ College level

☐ University degree level ☐ Postgraduate degree

☐ Other (please say) _____ ☐ Prefer not to say

10. How would you describe the environment that you work in?

☐ Urban ☐ Rural ☐ Semi-urban ☐ Other (please say) _____

11. How would you describe the community that you work in?

☐ City ☐ Town ☐ Village ☐ Trading Centre ☐ Other (please say) _____

In which general elections did your participate? (Tick all applicable)

☐ 1999 ☐ 2004 ☐ 2009 ☐ 2014 ☐ 2019 ☐ 2020

Questionnaire

Show the extent to which you agree with the role ICT based system played during the past elections. **1**= strongly agree, **2**=agree, **3**=not sure, **4**=disagree, **5**=strongly disagree.

Circle the answer that correspond to your thoughts

1. The paper-based system had challenges that warranted the use of ICT-based system
    a. 1 2 3 4
2. ICT enhanced the following parameters in the election
    a. Voter Registration
        i. 1 2 3 4
    b. individual identification at polling centres,
        i. 1 2 3 4
    c. transmission of results,
        i. 1 2 3 4
    d. election results accuracy checking,
        i. 1 2 3 4
    e. results verification,
        i. 1 2 3 4
    f. results approval
        i. 1 2 3 4
    g. Voting
        i. 1 2 3 4
    h. results monitoring by officials
        i. 1 2 3 4
    i. results monitoring by citizens
        i. 1 2 3 4
3. Which of the following was the introducing ICT-based system aimed at improving in the election management system? (multiple answers are acceptable)
    a. Registers
    b. individual identification at polling centres,
    c. transmission of results,
    d. voter confidence,
    e. election accuracy,
    f. transparency,
    g. stakeholder confidence,
    h. cost of elections,
    i. citizen participation quality)

4. Do you know the entire ICT infrastructure which is used normally in many other countries for elections?
5. Were all ICT infrastructures needed to effectively implement ICT-based election available
6. Were there any staff changes in ICT the ICT department before and after? (choose all that apply)
7. Were the staffs trained on election related ICT expertise?
8. What sort of training did the EC emphasize on?
9. Which of the following ICT areas were the staff members trained on?
10. What were the considerations that the EC took when choosing which ICT infrastructure and activities to adopt?
11. What challenges have you managed to solve with the introduction of the ICT infrastructure?
12. What sort of challenges have not yet solved with the introduction of the ICT?

Thank You

Appendix 2: Knowledge and Experiences of the Key Informants (Interview or Focus Group Discussion) Guide

Thanks for agreeing to take part in this interview / focus group.

Mr. Rudi is conducting a master's degree research which is aiming to assess the impact of the use of technology on the administration of elections in developing countries: a case of Malawi.

You have been asked to take part in this interview / focus group to find out your views and experiences on the administration of elections in Malawi pre and post technology era. We will start off by finding out a bit about your experiences of the processes involved in an election with and without the use of technology. Then we will talk about any challenges reported in the two eras.

I really want to understand your personal experiences and point of view on the matter, so you can be as honest as you want to be - please remember that there is no wrong or right answer. Please let me know at any point during the session if there is anything you feel uncomfortable talking about so that we can skip it.

The session will last approximately an hour. It will be recorded by voice recorder *(subject to consent)* to make sure we don't miss any of the information you provide but your identity will not be recorded during the interview. All the recording will be used strictly for research purposes and will be kept and disposed securely by the researcher.

Interview Guide

1. What challenges did the EC face during the paper based system that led to adoption of ICT-based system? Probe for electoral election process integrity (registers, individual identification at polling centres, transmission of results, voter confidence, election accuracy, transparency, stakeholder confidence, cost of elections, citizen participation quality)
2. Describe the ICT equipment used at the following stages in the electoral process: voter identification; ballot casting, ballot counting; results transmission etc
3. What sort of ICT infrastructure has the EC adopted for use in elections?
4. What sort of activities in election did the adopted ICT systems play in the election? Probe for solving of challenges listed in question 1.

5. Were there any staff changes in ICT department before and after the adoption of the ICT-based election management system? Probe for number of staff, expertise, qualifications.
6. Were you/ staff trained on the following skills in ICT systems (probe for things learnt and mode of learning)
    a. System maintenance?
    b. Addition of new features?
    c. System modifications?
    d. System malfunctions resolution?
7. What were the considerations that the EC took when choosing which ICT infrastructure and activities to adopt? Probe for lifespan of technology against the electoral cycle, staff, cost, etc.
8. What challenges have you managed to solve or minimise with the introduction of the ICT infrastructure?
9. What challenges have you not yet solved with the introduction of the ICT? And what challenges have arisen because of the use of ICT?
10. What were the ICT equipments that were needed for effective implementation of the ICT system? Which ones were available? Which ones were not available?
11. On what areas did the ICT system performed well and badly?
12. What should be done to improve the areas that failed?
13. What were your experiences with the following groups of people knowledge regarding the adopted ICT system?
    a. Malawians in general you know in general
    b. ICT personnel you know in general
14. Was there any synergy between manual or paper-based system methods and the introduced ICT system and its technologies?
15. What were the EC/stakeholders expectations in the ICT system adopted? And were they realistic in Malawian context?
16. Were the legal framework and electoral procedures considered carefully during the adoption process? How was it done?

Thank You

Appendix 3: Key themes

#	Objective	Key themes
1	Determine how the use of ICT (e.g. computers, optical scanners, cameras, printers etc.) has enhanced voter registration and verification processes in Malawi's May 2019 elections.	ICT-based EMS reduced the chain of work to be done. Use of biometric voter registration system significantly reduced the total number of temporary staffs
2	Determine how the country's Electoral Commission has effectively applied the use of technology in the management of general elections (and bye-elections).	ICT-based system was used synergistically with the traditional paper-based system as a back up ICT produced very consistent data and results for the EC ICT based system also helped with the checks for the number of registered voters against the number of people that voted.
3	Investigate how the use of ICT, have affected the credibility of the country's May 2019 electoral processes.	Opposition parties people doubted the system as a scheme for use for rigging. Credibility affected by lack of proper consultations with the stakeholders. There was lack of leadership confidence.
4	Examine how the use of technology in elections would breed risks that may affect elections.	ICT based system uses NRB equipment most of which was outdated. Use of ICT has restrictions on the identification for use during registration.

Appendix 4: Research permit

PRINCIPAL
Prof Richard Tambulasi, Ph.D.

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Department of Political and Administrative Studies

4th November 2019

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

APPROVED RESEARCH ACTIVITY: MR RUDI KING NORMAN

I refer to the above captioned matter. I write to introduce the bearer of this letter, Mr Rudi King Norman, who is our Master of Public Administration and Management student in the Department of Political and Administrative Studies at University of Malawi's Chancellor College.

Our postgraduate students are required, in partial fulfillment of the requirements for the Masters degree, to submit and defend a thesis at the end of their two years of study. Among other things, the said thesis is generally based on empirical data. In this regard, Mr Norman intends to carry out a data gathering exercise for this purpose and you have been sampled as one of the possible respondents/organisation. His **approved research topic** is entitled "HOW THE USE OF TECHNOLOGY HAS ENHANCED THE ADMINISTRATION OF ELECTIONS IN DEVELOPING COUNTRIES: A CASE OF MALAWI".

Any assistance rendered to him in the course of this exercise will be highly appreciated. Let me also point out that the information gathered will be treated as confidential and it is purely for academic purposes.

If you have any questions please do not hesitate to contact me.

Yours faithfully,

PROF. H.M.KAYUNI, BA(Pub Admn) *Mlw*, BPA, MPA *Stell*, PhD *Western Cape*

Supervisor, Department of Political & Administrative Studies