



**MOVING WITH THE TIMES? ANALYSIS OF THE MALAWI NATIONAL
EXAMINATIONS BOARD'S E-REGISTRATION POLICY FORMULATION**

MASTER OF EDUCATION (POLICY, PLANNING AND LEADERSHIP) THESIS

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DECLARATION

I, the undersigned, hereby declare that this thesis is my own original work which has not been submitted to any other institution for similar purposes. Where other people's work has been used, acknowledgements have been made.

.....

Full Legal Name

.....

Signature

.....

Date

CERTIFICATE OF APPROVAL

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

Signature:_____Date:_____

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Supervisor

DEDICATION

I dedicate this thesis to my two children, Nova and Ori, for persevering with my absence and long nights during this academic endeavour.

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I am greatly indebted to my employer, the Malawi National Examinations Board, for both the sponsorship and indeed allowing me to be off-duty whenever studies called.

I fully recognise potential researcher bias that might arise from researching on your employer's policy. However, my intimate knowledge of the organisation provided me with treasured insights and a deep understanding that external researchers might lack. This, therefore, enriched the depth and clarity of the study. Further, the use of multiple data sources such as interviews, focus group discussions and document analysis addressed researcher bias.

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ABSTRACT

The Malawi National Examinations Board developed an electronic registration policy, which comprised electronic payment and electronic results, and rolled it out across the country in 2023. Introduction of this Internet and Communication Technology intervention into the public examinations sector, whose actors are wide and diverse, called for thoroughness in policy formulation so that its implementation should not keep out the very stakeholders that the policy targeted to benefit. The study, therefore, aimed to examine how MANEB formulated and configured the e-Registration to replace the traditional manual registration method for national examinations; and to examine whether MANEB indeed followed best practices for policy formulation since this directly influences policy success or failure during implementation. The study used a qualitative methodology and case study design, and generated data through a triangulation of methods, which included document analyses, semi-structured interviews and focus group discussions. The generated data were analysed thematically using Framework Analysis. Findings of this study reveal that there were enough contextual challenges to influence policy change and e-Registration seemed to be best policy option. Further, the findings show that being an ICT intervention, the policy was formulated to be easy to use even for the user with very basic technological skills, in addition to being useful in addressing challenges the policy was meant to address. Results of this study indicate that stakeholder engagement was key to a successful formulation and implementation of an educational policy since such stakeholders own the policy; as such, they would be willing to implement when involved.

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LIST OF ABBREVIATIONS AND ACRONYMS

AEB	:	Associated Examining Board
DEMO	:	District Education Management Office
CWED	:	Central West Education Division
ICT	:	Information and Communication Technology
JCE	:	Junior Certificate of Education
MANEB	:	Malawi National Examinations Board
MCE	:	Malawi Certificate of Education
MoE	:	Ministry of Education
MSCE	:	Malawi School Certificate of Education
PSLCE	:	Primary School Leaving Certificate of Education
PTCE	:	Primary Teacher Certificate of Education
TAM	:	Technology Acceptance Model
TB	:	Testing Board

CHAPTER ONE

INTRODUCTION

1.1 Chapter Overview

This chapter introduces the study by showing that registration of candidates for national examinations in Malawi has been manual since the establishment of the Malawi National Examinations Board (MANEB). It further recounts the transition from the manual registration to electronic registration. The chapter further presents a problem statement, objectives of the study and research question as presented below.

1.2 Background and Context

The growth and development of any country depends heavily on education, which provides people with the knowledge and skills they need to survive and succeed in both their personal and professional lives (Knight, 2004). Education intertwines with examinations, with examinations acting as a yardstick for evaluating students' academic performance and determining their eligibility for further education or employment opportunities (Charamba & Dlamini-Nxumalo, 2022). The official body in charge of organising and managing national examinations in Malawi is the Malawi National Examination Board (MANEB, 1987).

1.2.1 Brief History MANEB

MANEB was initially established as the Malawi Certificate Examination (MCE) Board under an Act of Parliament in 1969 to develop and administer the Malawi Certificate of Education examinations. The MCE Board later merged with the Regional Testing Centre, which offered psychological tests and research services for Malawi, Botswana, Lesotho and Swaziland; and it came to be the Malawi Certificate of Education and Testing Board

(MCE&TB). The first examinations were administered in 1972, with technical support, establishment and localisation by the Associated Examining Board (AEB) of the United Kingdom (Chakwera *et al.*, 2004).

In 1987, the Malawi Government ordered that all assessment activities should be conducted by a single body. As such, the examinations section in the Ministry of Education, which had previously been running the Primary School Leaving Certificate of Education (PSLCE) examination and Junior Certificate of Education (JCE) examination, was merged with MCE & TB to become MANEB. In 1992, MANEB was given an added responsibility of developing and administering Malawi Craft Examinations which were previously run jointly by the Malawi Government and City and Guilds of London. MANEB also took over the responsibility to develop and administer the country's Primary Teacher Certificate of Education (PTCE) examination (Chalila & Nkhoma, 2003) Ever since, MANEB has been developing and administering the PSLCE, JCE, MSCE and PTCE examinations.

1.2.2 Manual Examinations Registration

Throughout these years, MANEB had been manually registering candidates for all examination levels. The manual process involved MANEB sending examination centres a CD containing a spreadsheet of a registration template. The template was designed to be filled with candidate details such as name, sex, date of birth and subjects.

Seri	District	CentreName	CentreNo	Ty	Sex	Of	Day	Mon	Yearof	StudentName(Surname)	AGR	BIO	CHI	CHE	ENG	GEO	HIS	LIF	MAT	PHY	SOC	Total	Fees	I Sign
1	DOWA	MAGANGA PVT SE	1471	INT	F	11	4	9	2001	ALISON GRACE	012	022	032		052	073	081	124	131			8	14700.00	
2	DOWA	MAGANGA PVT SE	1471	INT	F	18	1	2	2003	ACKIM FLORENCE	012	022	032		052	073		124	131		193	8	14700.00	
3	DOWA	MAGANGA PVT SE	1471	INT	F	11	25	2	2000	BANDA JANE	012	022	032		052	073		124	131		193	8	14700.00	
4	DOWA	MAGANGA PVT SE	1471	INT	F	11	17	3	2004	CHIMBIYA IVY	012	022	032	038	052	073		124	131		193	9	16100.00	
5	DOWA	MAGANGA PVT SE	1471	INT	F	11	31	1	2002	CHINYAMA BRENDA	012	022	032		052	073		124	131		193	8	14700.00	
6	DOWA	MAGANGA PVT SE	1471	INT	F	11	19	3	2000	HUMHPREYS EUNICE	012	022	032		052	073		124	131		193	8	14700.00	
7	DOWA	MAGANGA PVT SE	1471	INT	F	11	10	1	2001	LEMISON AGNESS	012	022	032		052	073	081	124	131			8	14700.00	
8	DOWA	MAGANGA PVT SE	1471	INT	F	11	3	4	2003	LEMISON VERONICA	012	022	032		052	073	081	124	131			8	14700.00	
9	DOWA	MAGANGA PVT SE	1471	INT	F	11	26	2	1998	MWASE CHRISSY	012	022	032		052	073		124	131		193	8	14700.00	
10	DOWA	MAGANGA PVT SE	1471	INT	F	11	11	1	2002	SANDIFOLO MODESTER	012	022	032		052	073		124	131		193	8	14700.00	
											10	10	10	1	10	10	3	10	10	0	7	81	148400.00	
SIGNATURE OF HEAD OF SCHOOL																								
PHONE NUMBER/S																								
AND																								
SIGNATURE OF DEM																								
PHONE NUMBER/S																								
AND																								

Figure 1: Sample spreadsheet template for exam registration. Source: MANEB (2019)

Examination fees payable via schools was generated automatically (Solomon, 2017). Figure 1 illustrates:

Upon registering all candidates, MANEB would request examination centres to burn candidates' registration data onto compact discs (CDs) and print five copies from the burnt CD. These documents were then sent to MANEB, through centres' respective district education offices for further processing. MANEB would then process the data, produce nominal rolls and share the nominal rolls with schools for verification.

1.2.3 Electronic Registration for Examinations

In order to address challenges arising from manual registration, MANEB developed an e-Registration policy. This provides a web-based portal that allows examination centres to register candidates and amend candidate details, where necessary, in real time without engaging MANEB. It further allows for e-Payment of examination and ID fees on various platforms such as mobile money as well as mobile and internet banking (MANEB, 2022).

For one to use the e-Registration portal, it is necessary for a school to have the following facilities (MANEB, 2022):

- a. Examination centre number as provided by MANEB after inspecting the school;
- b. An active e-Registration user account with a username and a secure password as provided by MANEB;
- c. A laptop or desktop computer running on at least Windows 7 operating system, or smartphone or tablet. The device should have a web browser installed;
- d. A reliable internet connection with at least 1Mbps bandwidth; and
- e. An uninterruptible power system (UPS) and a LaserJet printer where possible.

For an examination centre to start the e-Registration, a school representative follows the process below:

- a. Connect the computer, smart phone, or tablet to the internet using any available internet service
- b. Open the web browser and type or enter <https://maneb.malawi265.com> in the address bar.
- c. Once the portals' login page loads and prompts user authentication, enter username and password as provided by MANEB.
- d. Once logged in, the user can register candidates in real time by capturing the biodata, chosen subjects and passport size photo. This goes direct to MANEB servers.
- e. Upon receiving the data, MANEB servers generate an individualised invoice, which sits in the respective examination centre portal, ready for download.
- f. Upon downloading the invoices which have unique invoice numbers, the exam centre prints and distributes the invoices to respective candidates.
- g. Using the unique invoice numbers, candidates, parents or guardians pay examination fees electronically via mobile money or mobile banking. This payment goes direct to MANEB and gets reflected on the school registration portal in real time.

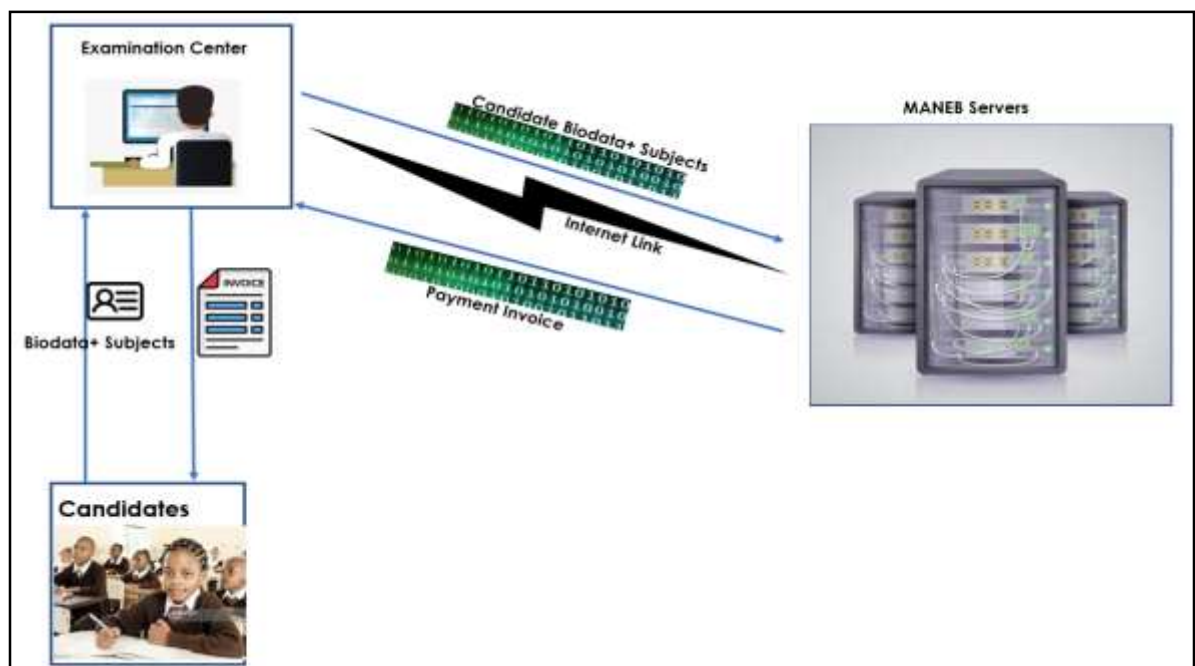


Figure 2: e-Registration Graphic Representation: Source: MANEB (2022, slide 3)

1.3 Problem Statement

Although the e-Registration policy sounds to be appealing, it has not been evaluated in terms of its development, its implementation and its expected effectiveness in the examinations sector. There is, therefore, need to understand how the policy was developed, how its implementation was planned, how policy users on the ground view it, any policy flaws and how such flaws, if any, could be rectified.

1.4 Main Objective of the Study

This study aimed to examine how MANEB formulated and configured the e-Registration to replace the traditional manual registration method for national examinations. The study, therefore, examined whether MANEB followed best practices for policy formulation since this directly influences policy success or failure during implementation.

1.5 Specific Objectives of the Study

The objectives of this study were as follows:

- i. To assess the extent to which the e-Registration policy conceptualisation adhered to conventional policy-making best practices
- ii. To examine the impact of the e-Registration policy on efficiency, data accuracy, and safety of examination
- iii. To evaluate the degree of consideration given to poor access to smart devices and internet during the e-Registration policy formulation

1.6 Research Questions

The research questions guiding this study are as follows:

- i. How thoroughly did the e-Registration policy formulation conform to established policy-making best practices?
- ii. To what degree does the e-Registration policy improve registration efficiency, data accuracy and safety of examination fees?

- iii. How meticulous was the consideration given to poor access to smart devices and internet during the e-Registration policy formulation

1.7 Significance and Relevance of the Study

This study is crucial because it could help Malawi in general and MANEB in particular to effectively develop and improve their educational policies. Further, this study could help with evidence-based decision-making by analysing the development of the e-Registration policy, its effectiveness, and challenges, and by highlighting areas that need policy improvement. Policymakers, educational institutions, and other stakeholders involved in the examination process will be able to use the findings to inform future policy interventions and gain insight into the effects of ICT interventions on the educational system.

1.8 Definition of Operational Terms

The following are operational terms and their meanings as used herein in relation to examinations:

e-Payment: the digital collection, storing and processing of examination fees of prospective candidates for national examinations

e-Registration: the digital collection, storing and processing of data of prospective candidates for national examinations

Portal: an electronic web-based platform that provides access to register candidates for national examinations

e-Results: a web-based service that allows for checking of both individual and school examination results

Internet Enabled Gadget: an electronic device that connects to the internet and allows one to perform electronic registration

Key Participant: an individual knowledgeable in the area of study and takes part in study by providing information that the researcher collects.

1.9 Chapter Summary

This chapter has shown that registration of candidates for national examinations in Malawi has been manual since the establishment of MANEB in 1987. With the changing world, the new ways of doing business, new challenges, and indeed the new era of technology, MANEB is moving with the times by embracing technology in its examination registration processes. While this could be a welcome development, introducing such innovations is not a haphazard arrangement; rather it is a painstaking process, which follows laid down processes.

This is why the study examined whether MANEB indeed followed established best-practices for policy formulation, in addition to making thorough considerations on all factors that could negate the successful implementation of this policy.

The next chapter presents literature review and theoretical framework guiding the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Chapter Overview

This chapter presents issues from policy such as the definition of policy, policy cycle, models of public policy and factors influencing for policy failure. From the ICT intervention lens, the chapter also presents ICT policy frameworks in Malawi, trends in ICT use in Malawi in both the education sector and in examinations sub sector, factors affecting ICT integration in schools, theoretical perspective as well as theoretical and conceptual frameworks. The chapter further identifies a gap which this study fits it.

2.2 Defining Policy

At the outset, it will be proper to have a working definition of the term *policy* as used in this study. While various scholars have defined policy differently, we will look at only few definitions pertinent to the proposed study. Firstly, Haddad and Demsky (1995) define policy as an explicit or implicit single decision or group of decisions, which may set out directives for guiding future decisions, initiate or retard action, or guide implementation of previous decisions. Reimers and McGinn (1997) also define policy as a statement of actions to be preferred in the pursuit of one or more objectives of an organisation. Birkland (2001) as quoted in Savard and Banville (2012) further defines policy as a government statement of what it intends to do or not to do, including law, regulation, ruling, decision, or order. Lastly, UNESCO (2013) refers policy to a broad statement that sets out the government's main goals and priorities, in line with the country's constitution and can be sector-wide (e.g., education sector policy) or specific to a sub-sector (e.g., primary education) or to a certain issue (e.g., low enrolment rates). In summary, all the definitions agree that policy as a statement or decision coming from government, or its agencies aimed at improving a way of doing business. Policy is, therefore, a position developed in response

to a problem or issue of conflict and directed towards a particular objective (Bell & Stevenson, 2006).

Coming to the definition of public policy, it is the sum of government activities, whether pursued directly or through its agents, having an influence on the lives of citizens (Dye, 1998). Education policy, on the other hand, is one that establishes the main goals and priorities pursued by the government or its agents in matters of education— at the sector and sub-sector levels— regarding specific aspects such as access, quality and teachers, or to a given issue or need (UNESCO, 2013). Therefore, education policy is a public policy as it affects the lives of citizens.

2.3 Models of Public Policy

Having defined public policy in general and education policy in particular, it will be essential to lay out some models that inform policymaking, and relevant to the study at hand. However, first things first: what is a model?

A model or conceptual model, as Dye (1998) puts it, is a simplified representation of some aspects of the real world. He further says conceptual models are used in the study of public policy to simplify and clarify our thinking about public, policy and direct our efforts to understanding public policy better by suggesting what is important or not.

Related to this paper are three models namely; *rational, incremental and institutional* as discussed in the following subsections.

2.3.1 The Rational Model

The Rational Model underscores the significance of exploring value choices and policy alternatives in order to formulate efficient and effective policies (Dye, 1998). It further encourages governments to select policies that maximise social gains and outdo costs. The model, involves technical, legal, and economic levelheadedness in decision-making (Umar & Kuye, 2006).

2.3.2 *The Incremental Model*

Unlike the rational model, incremental model is conservative in the sense that it considers existing programs, policies and expenditures as a base for policy decision-making (Dye, 1998). Further, in this model, policy makers generally accept the legitimacy of established programs and tacitly continue the previous policies. At the core of this model are three fundamental insights about policymaking and evaluation (Halpern & Mason 2015).

The first insight is that one can go a long way towards improving an existing policy by focusing on cost effectiveness; the second one says many small changes to a policy or program can add up to a big change in cost effectiveness; the last one is that good evaluation will never be the norm while it is time-consuming, costly and disruptive (Dye, 1998; Mason, 2015). Over and above, incremental model also considers political expedience as it is easier to agree when disputes are only on the decrease, increase, or modifications to existing programs. As such, incremental model reduces conflict, maintains stability and preserves the political system (Dye, 1998).

2.3.3 *The Interactive Model*

This model promotes cooperation and coordination by encouraging government bodies to collaborate with other authorities when developing policies (Driessen *et al.*, 2001). As Hartwell (1994) notes, any attempt to make a policy decision without stakeholders' involvement results in lacking their full support and it is a recipe for policy failure.

In summary, the models discussed above look at policymaking from different angles. As such, use of multiple models in policymaking could indeed produce a best policy, which is rational, incremental and interactive. This will ensure maximum gains, political expedience and support, just to mention but a few. As regards e-Registration, literature suggest that there was already manual registration which was partly using excel template; and this has been upgraded to be web-based. This auger well with the three policy models explained in the preceding sections.

2.4 The Policy Cycle

Having looked at models of policymaking, we will now discuss the policymaking process also known as the *policy cycle*. The term policy cycle, as defined by Savard and Banville (2012), refers to “the recurrent pattern shown by procedures that ultimately lead to the creation of a public policy”. The policy cycle models the policy process as a series or stages of political activities, which consist of *agenda setting*, *policy formulation*, *policy adoption*, *implementation*, and *evaluation* (Kingdon, 1995; Knill & Tosun, 2008; Jann & Wegrich, 2017). Analysis of this process, by dividing it into stages, gives explanatory insights into the decision-making process, especially on sectoral realities of public policy processes (Savard & Banville, 2012). Since it is necessary to appreciate an ideal policy cycle, what follows is a closer look of each stage:

2.4.1 *Agenda setting*

Before delving into agenda setting, understanding of the term *agenda* from policy lenses will be necessary. Birkland (2017) defines *agenda* as “a collection of problems, understandings of causes, symbols, solutions, and other elements of public problems that come to the attention of members of the public and their governmental officials”. Agenda setting, therefore, is the process by which problems and alternative solutions gain or lose public and elite attention. It is the first stage in the policy cycle where people recognize problems, generate proposals for public policy changes and engage in such political activities as lobbying (Kingdon, 1995; Birkland, 2017).

According to Knill and Tosun (2008), four types of actors, namely; *public officials*, *the bureaucracy*, *the mass media*, and *the interest groups*, mostly set the policy agenda. Public officials in elected positions, such as; the state president, the parliament, the ministries and courts, are *de facto* agenda builders, courtesy of their advantaged positions, which “enables them not only to make policies, but also to place certain issues on the agenda”.

2.4.2 Policy formulation

Having put the agenda on the table through agenda setting, the next stage is policy formulation where there is transformation of expressed problems, proposals, and demands into government programs (Jann & Wegrich, 2017). This stage involves the process of identifying, refining, and formalizing courses of action or policy options to address the issues on the formal agenda (Villa Alvarez *et al.*, 2022; Howlett *et al.*, 2009). Policy formulation, therefore, includes the definition of objectives to be achieved with the policy as well as consideration of different action alternatives.

2.4.3 Policy adoption

Unlike agenda setting and policy formulation, which courts stakeholders to participate in the processes, policy adoption stage involves government institutions only to determine the final adoption of a specific policy alternative (Knill & Tosun, 2008). A number of factors determine adoption of a policy option. Such factors include party affiliation, constituency interests, public opinion. In fact, party loyalty is an important decision-making criterion for most members of parliament (Bowler *et al.*, 1999; Anderson, 2003).

2.4.4 Implementation

Jann and Wegrich (2017), quoting O'Toole (2000), broadly define policy implementation as “what happens between the establishment of an apparent intention on the part of the government to do something or to stop doing something, and the ultimate impact in the world of action”. It is at this stage where policies and their initial objectives are often modified or even distorted; and their execution delayed or even blocked in worst cases. This happens because activities at the frontline are hardly ever perfectly controllable by intended objectives (Jann & Wegrich, *ibid*).

Put differently, this stage involves the translation of plans into practice; the putting of solutions into effect; the carrying out of decisions through the application of government directives; and the meeting of policy with reality on the ground (Howlett & Ramesh, 2003; Savard & Banville, 2012; Mwije, 2013). As Dye (1998) observes, it is at this stage where

allocation of resources and assignment of responsibilities become paramount if the policy is to be implemented with the efficiency and effectiveness it deserves.

2.4.5 Evaluation

Scholars define policy evaluation as processes that succeed policy implementation where both state and societal actors monitor results of policies; and whose outcome could result in reconceptualization of policy problems and solutions (Howlett & Ramesh, 2003; Mwije, 2013). Since policymaking aims at contributing to problem solving, or at least to the reduction of the problem load, policy evaluation answers questions such as whether the output of the policy has addressed the initial problems (Knill & Tosun, 2008; Mwije, 2013).

Evaluation does not mark the end of the policy cycle. Rather, while it can lead to the termination of the policy in order to bring another one; it can also result in policy redesign based on modified problem perception and agenda setting, thereby continuing with the policy cycle (Mwije, 2013). Continuity of a policy after evaluation may also result in policy change, where there is an improvement of an evaluated policy. The policy change could be “normal” pattern, which involves altering various aspects of existing policy styles and policy paradigms without altering the overall shape or configuration of a policy regime; or ‘atypical’ policy change where there are substantial changes in policy paradigms and styles (Howlett & Ramesh, 2003; Mwije, 2013).

Much as these stages may not follow the exact chronological order as presented, they still inform policy formulation. This study, therefore, explored if the formulation of the e-Registration policy followed or attempted to follow this best policymaking practice.

2.5 Factors Affecting Policy Success/Failure

Having looked at policy cycle above, the policy may succeed or flop when it hits the ground. Literature is abound with factors that contribute to policy success and/or policy failure. This section, therefore, peeps into such literature and presents some of such factors as *policy financing, stakeholder participation and political influence*.

2.5.1 Policy Financing

In his research study in East Africa on *why education policies can fail in Africa*, Psacharopoulos (1990) observes that absence a planned policy financing is a major stumbling block to successful educational policy implementation. The study states that policy outcomes fall far short of matching expectations, mainly because of insufficient, or the absence of, implementation as most educational policies are not implemented at all because the financing implications are not always worked out, on top of their implementation plan being vaguely stated. Brinkerhoff and Crosby (2002), through their Task Model, also add some voice to policy financing. They observe that to implement a policy, there is need to gather support for a new policy, such as accumulation of financial resources if the policy is to be implemented successfully.

2.5.2 Stakeholder participation

No policy has ever succeeded without full engagement and contribution of stakeholders. Quoting Reimers and McGinn (1997), Kayira (2008) says stakeholders are people with a common interest in a particular action, consequences of the action, and indeed affected by the action. As such, the people who can influence or get affected by changes in examination registration are the stakeholders who need to be engaged such as learners, teachers, parents/guardians, just to mention a few.

Adding voice to stakeholder engagement is, Wolf *et al* (1999). In their book, *Where policy hits the ground*, they say that many studies have concluded that the key ingredient to successful policy implementation is the participation of a wide range of stakeholders in the policy formation process. They, however, expresses worry that complex forces are at work in most countries. As such, policies are not always created in such a participatory fashion.

2.5.3 Political Influence on Policy

Changes in politics can make or break policies. For instance, the first general election in Malawi in 1994, under multiparty democracy, had a serious bearing on some of educational

policies in the country. The Malawi Government, in an attempt to appease both the international community and the electorate, introduced the free primary education (FPE) programme, resulting in a dramatic increase in enrolment.

The policy was abrupt and did not sufficiently consider the ways in which direct and indirect costs of schooling would continue to be prohibitive for some households, or the effects that the expansion would have on quality. As such, it negatively affected policy implementation (Kadzamira & Rose, 2003). This was also the case in Ethiopia and Benin (Wolf *et al.*, 1999).

As presented here, this study further attempted to discover if the e-Registration policy could also face such challenges as financing and stakeholders' interest in the policy. Since formulating a policy is one thing and implementing it successfully is yet another thing, understanding policy challenges was also important in this study. This has been discussed under findings.

2.6 ICT Policy Frameworks in Malawi

ICT integration does not occur in a vacuum but in a society. Societies, like Malawi, have various legal frameworks that could spur or inhibit ICT development in a given country. This section, therefore, presents some of the available ICT policy frameworks in Malawi and their applicability to the proposed study as discussed in the following sections:

2.6.1 *The Constitution*

The Constitution of the Republic of Malawi forms the bedrock of ICT policy frameworks in the country. Though enacted in the pre-ICT era in 1994, it still provides for appropriate rights which extend to ICT. Section 21 of the Malawi Constitution, for instance, provides for the right to personal privacy, which includes the right not to be subjected to arbitrary searches of a person, their property; seizure of private possessions; or interference with private communications that includes mail and all forms of telecommunications (Malawi Constitution, 2017). This provides for a fertile ground for ICT development in the country.

2.6.2 *ICT-specific Policies*

In addition to the Constitution, the Malawi Government further developed the Malawi National ICT for Development (ICT4D) Policy in 2006; and the National ICT Policy in 2013 (Malawi Government, 2006; 2013). The policies aim at providing a framework for deployment, exploitation and development of ICTs to support the process of accelerated socio-economic development in Malawi. Further, they intend to provide direction for systematic ICT program development, implementation, monitoring and review. Above all, they mean to support the national goal of wealth creation and reduction of poverty through sustainable economic growth and infrastructure development (Malawi Government, *ibid*)).

2.6.3 *International Instruments*

Further, Malawi is party to several international instruments that provide for the right to privacy, and this syncs well with the use of ICT without fear of being harassed or having one's privacy compromised, among others. As CIPESA (2021) observes, such international instruments include: the Universal Declaration of Human Rights (Article 12); the International Covenant on Civil and Political Rights (Article 17); Convention on the Rights of the Child (Article 16); the African Charter on the Rights and Welfare of the Child (Article 19); and the Declaration of Principles on Freedom of Expression and Access to Information in Africa (Principles 40 and 41).

2.6.4 *Other Documents*

Further, Malawi also developed the National Education Sector Investment Plan (NESIP) 2020-2030, which is a long-term, strategic document that provides guidance on the planning and implementation of all education development programs, projects and activities. NESIP was informed by emerging issues in the National Education Policy of 2016, the third Malawi Growth and Development Strategy (MGDS III), National Education Act No 21 of 2013, Sustainable Development Goals (SDGs) particularly SDG 4, Africa Union Agenda 2063 and Continental Education Strategy for Africa (CESA) (Malawi Government, 2020). NESIP places emphasis on ICT-enabled pedagogy to improve the

quality of teaching and learning, and on the development of an ICT policy to strengthen administration, financial management and accountability in the education system (Saka, 2021). Lately, Malawi through Agenda 2063 included ICT as one of the enablers to achieving development as a country.

2.6.5 Data Privacy and Security

Just as every coin has two sides, so is ICT intervention as it has both positive and negative sides (De Oliveira & Júnior, 2016). Amid fears among ICT users of their safety when using ICT platforms, the Government came in again and enacted the Electronic Transactions and Cyber Security Act (Malawi Government, 2016). On top of making provision for electronic transactions, the Act also provides for the establishment and functions of the Malawi Computer Emergency Response Team (mwCERT), a department within the Malawi Communications Regulatory Authority (MACRA) acting as a focal point for coordination of cybersecurity related issues at national and international level. It also takes charge of critical-information-infrastructure-protection actions and serve as a base for national coordination to respond to cyber security threats (MACRA, 2022).

In buttressing the Electronic Transactions and Cyber Security Act, the Malawi Government enacted the Data Protection Act (Malawi Government, 2024) that aims to provide an all-inclusive regulatory charter for guarding private data in the country. The Act still designates MACRA as the data protection authority to oversee the law's implementation.

As can be seen, Malawi has some good policy framework for the development of ICT but is this indeed making ICT flourish? The next section addresses this question by delving into trends of ICT use in Malawi.

2.7 Trends of ICT use in Malawi

Access and use of Internet services has grown over the past decade at both household and individual levels. Nevertheless, inefficiencies in the sector remain one of the main challenges, derailing the progress of ICT in Malawi as discussed in the sections that follow.

2.7.1 Erratic Network

Network failure and slow internet speed seem to be synonymous with Malawi's ICT industry, resulting in transactions through ICT related platforms becoming horrific, with users spending more time over a transaction that would have otherwise taken seconds. As Kainja (2015) observes, the few users who can afford the Internet in Malawi persevere frustratingly slow connection speed at an average of 1.3 Mbps in 2017 down from 1.7 Mbps in the previous year; against global average of 7.0 Mbps at the time. The ICT Association of Malawi (ICTAM) President then, Wisely Phiri, is quoted as saying network failure and slow connections are mostly an excuse used to define several problems, which range from core system failures to peripheral failure (Sangala, 2016).

2.7.2 High Internet Cost

High cost of accessing Internet in Malawi is another potential risk to ICT development. The United Nations' Broadband Commission for Sustainable Development developed a measure of internet affordability in 2018 as part of its goal to close the global digital divide. In the measure, affordable internet is where 1GB of mobile broadband data is priced at 2% or less of average monthly income (McCarthy, 2019; Gong, 2020). As for Malawi in 2019, with the monthly income of K29,200 (about \$40.96) and 1 Gigabyte of unbundled data costed at K5 000.00 (about \$6.86) for 30 days, internet was very expensive at 17.1% ($K5000/K29200 \times 100$) of the average monthly national income, against the 2% threshold (Kainja, 2019). Further quoting Freedom House's Freedom on the Net 2018 report, Kainja (2019) writes that Malawians had to pay up to 44 percent in tax to access the Internet. The tax being a 17.5 percent value added tax (VAT) on mobile phones and services; a 16.5 percent VAT on Internet services; and an additional 10 percent excise duty on mobile phone text messages and Internet data transfers, introduced in 2015.

2.7.3 Mobile Phone and Internet Use

This notwithstanding, the percentage of households with access to internet services in Malawi increased to 18.4 percent in 2023 up from 9.9 percent in 2019. In urban areas, it

shot to 44.7 percent in 2023 up from 31.9 percent in 2019; while in rural areas, it increased to 13.6 percent in 2023 from 5.9 percent in 2019 most of whom used mobile phones (NSO, 2019; NSO, 2023).

As for mobile phone use, NSO (2019 & 2023) reports that 68.9 percent of individuals in Malawi use a mobile phone up from the 65 percent reported in 2019. As for place of residence, 85.9 percent of urban residents used mobile telephones in 2023, up from 65.5 percent of the rural residents in 2019. Among these individuals who used mobile phones in the last three months prior to the survey, 41 percent used smartphones at the national level; 62.6 percent in urban areas and 34.7 percent in rural areas.

In summary, slow Internet speed, network failure, high cost of accessing Internet, exorbitant taxes imposed on internet enabled gadget and low ICT literacy are all militating against the smooth ICT penetration in Malawi. This relates well to e-Registration policy under discussion since any detriments to the internet and gadgets could directly affect policy user's acceptance or rejection of the policy.

2.8 ICT use in Education Sector

Various scholars have conducted studies on the integration of ICT into the education sector. In this section, we are discussing studies that focus on ICT in education in general and in the examination system in particular.

2.8.1 In Education

Pelgrum and Law (2003) are among scholars that looked at trends, problems and prospects of ICT in education. The study concludes that secondary experience on ICT use is a formidable source of learning since the problems others face, the objectives they seek, the routes they try, the results they arrive at and the unintended results they produce are worth analysis and learning from. In fact, success of ICT integration into education requires collaboration and teamwork, so the study argues.

Hernes (2002), on his part, says educators at all levels are instrumental in ensuring the proper introduction and integration of ICT into the teaching and learning process. He adds that ICT transforms dynamics of the education enterprise by practically changing the roles of teachers, administrators, students, and parents. At the same time, ICT breaks school insulation and connect schools to a world beyond the immediate environment, thereby making schools more transparent to parents and communities at large. As expected from any innovations, there is no guarantee that such educators will be supportive to the innovations. As such, educators need to be convinced of the benefits of ICT to them and their professions; and they [educators] must be brought actively into the early stages of planning and development (Hernes, *ibid*)

Research on integration of ICT in developing countries, including Malawi, shows that ICT is a potent force in driving economic, social, political and educational reforms. As such, developing countries cannot afford to stay passive to ICT if they are to compete and strive in the global economy (Jhurree, 2015). The report adds that the health of the economy of any country, poor or rich, developed or developing, depends substantially on the level and quality of the education it provides to its workforce. With the education reform occurring throughout the world, one of the tenets of the reform is the introduction and integration of ICT into the education system, and in examinations sector in particular. This takes us to ICT integration in the examinations system.

2.8.2 In Examinations

Akbar and Qureshi (2015) tout the use of ICT in an examination system, saying it minimises human intervention as well as compact storage and speedy retrieval of data. Having conducted a study on the role of ICT in a good examination system in Pakistan, the study recommends automating the existing examination system because the manual examination system can no longer handle large candidature with the efficiency and effectiveness that the registration process requires. In Zambia, there was a similar study, which focused on the automation of the candidate registration for school examinations using the cloud model as administered by the Examinations Council of Zambia (ECZ),

(Milumbe, 2016). The study asserts that utilisation of ICT has become an integral component in organisations to improve efficiency and effectiveness.

In Kenya, too, the Kenyan National Examinations Council (KNEC) uses e-Registration) for examinations. In brief, the e-Registration system as managed by KNEC “generates a unique form number for individual candidates, validates various student details, registers in batches into schools, generates examination numbers for candidates, [and] selects compulsory subjects by default for all candidates, among other things” (Odede, 2012). The same applies to Uganda. As Capuc and Atibuni (2017) write, the Uganda National Examinations Board (UNEB) uses e-Registration of candidates in which its examination centres register the candidates electronically using web portals or desktop applications with the capability to send the registered candidates’ entries via email. This, they say, aims to cut UNEB’s costs of procuring entry forms, save the schools from the costs of collecting and returning entry forms and above all electronic storage of candidate records.

In summary, scholars are advocating for the use of ICT in the education sector in general and examinations sector in particular. As for ICT use in registration of candidates for examinations, they argue that this has the potential of achieving effectiveness and efficiency in the process. Could the introduction of e-Registration for national examinations in Malawi produce the same effectiveness and efficiency as in other countries? This study will answer this question.

2.9 Determinants of ICT Integration in Education

Integration of ICT into the education system in general, and examination sector in particular, cannot be all rosy. Rather, there are pockets of challenges that could lead to policy failure if not addressed at the onset of policymaking. In this section, we will look at factors such as teachers' competence in ICT, level of and accessibility to the ICT infrastructure; support by educational institution administration and the specific technology (Igbo, 2015; Karipidis & Prentzas, 2016).

2.9.1 Teachers Competence in ICT

Success or failure of any ICT intervention in schools is a product of the quality of ICT skills and knowledge that teachers have. Teachers' lack of ICT knowledge and skills is a grave obstacle to the integration of ICT. As such, incorporation of ICT in teacher training programs and hands-on in-service ICT trainings provide teachers with the needed technical knowledge and skills, allowing them to easily integrate ICT interventions in their schools, and the education sector as whole (Igbo, 2015).

2.9.2 Level of and Accessibility to the ICT Infrastructure

With technology changing at a supersonic speed, hardware and software resources keep changing, too, to be in harmony with new technologies. As such, level of and access to up-to-date ICT infrastructure is significant to diffusion of technology (Igbo, 2015). This follows that, ICT knowledge and skills aside, the sophistications of the ICT gadgets and access to the same can affect ICT integration in the education sector.

2.9.3 Support by Educational Institutions' Administration

The level of support that education institutions provide to teachers, and indeed the institutions overall attitude towards ICT integrations, can influence teachers' enthusiasm to integrate ICT at their institutions. The support could be in form of mere acknowledgement, encouragement, guidance or facilitation among teachers on the importance of the educational institution's role integrating ICT interventions (Karipidis & Prentzas, 2016)

2.9.4 Specific Technology

While there could support from educations institutions, state of the art gadgets, specific characteristics of each ICT intervention such as advantages, compatibility, complexity, ability to test and observe its use, support by provider and cost may also hinder or facilitate the innovation's use (Karipidis & Prentzas, 2016). As such, ICT interventions like the e-registration, need not be too sophisticated for someone with average ICT skills.

2.10 Conceptual Framework

The proposed study, as already mentioned, having two fronts: one for policy and another for ICT, entails that conceptual frameworks should ably reflect on both policy and ICT as much as possible. It is for this reason; therefore, that the study employed Haddad Conceptual Framework for Educational Policy Analysis; and the Technology Acceptance Model (TAM).

Haddad's Framework for Educational Policy Analysis (Haddad & Demsky, 1995) stands out among other policy analysis conceptual frameworks. This is because of its exhaustive policy process as it does not present a single decision but a sequence of decisions and actions (Hill, 1997). The framework (Haddad & Demsky, 1995) consists of seven policy-planning processes, the first four of which deal with policymaking, the fifth with planning, and sixth and seventh with policy adjustment.

The processes are:

- a. Analysis of the existing situation;
- b. The generation of policy options;
- c. Evaluation of policy options;
- d. Making the policy decision;
- e. Planning of policy implementation;
- f. Policy impact assessment, and
- g. Subsequent policy cycles.

Figures 3 and 4 illustrate the processes:

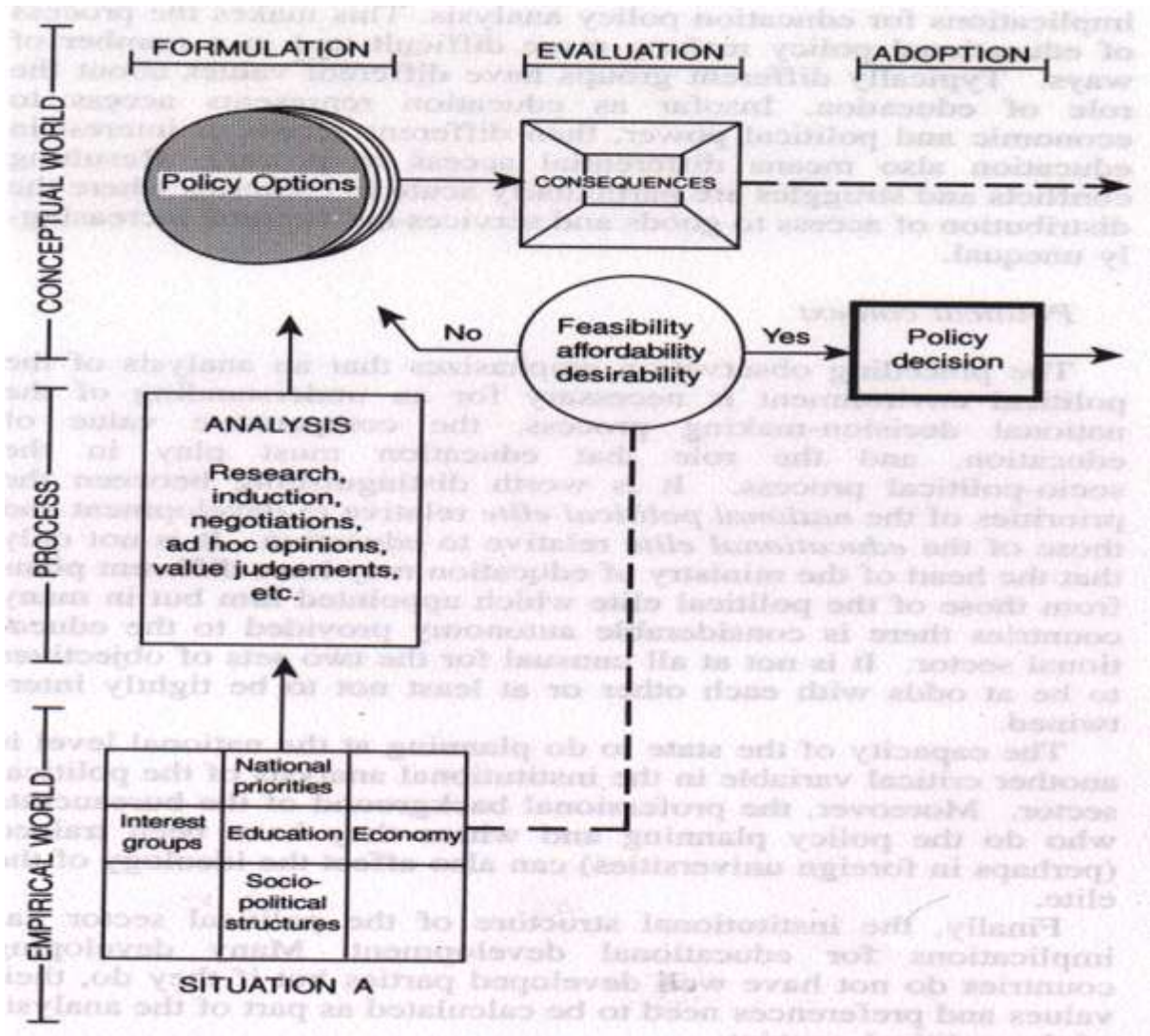


Figure 3: Haddad Conceptual Framework (A). Source: Haddad & Demsky (1995, p.26)

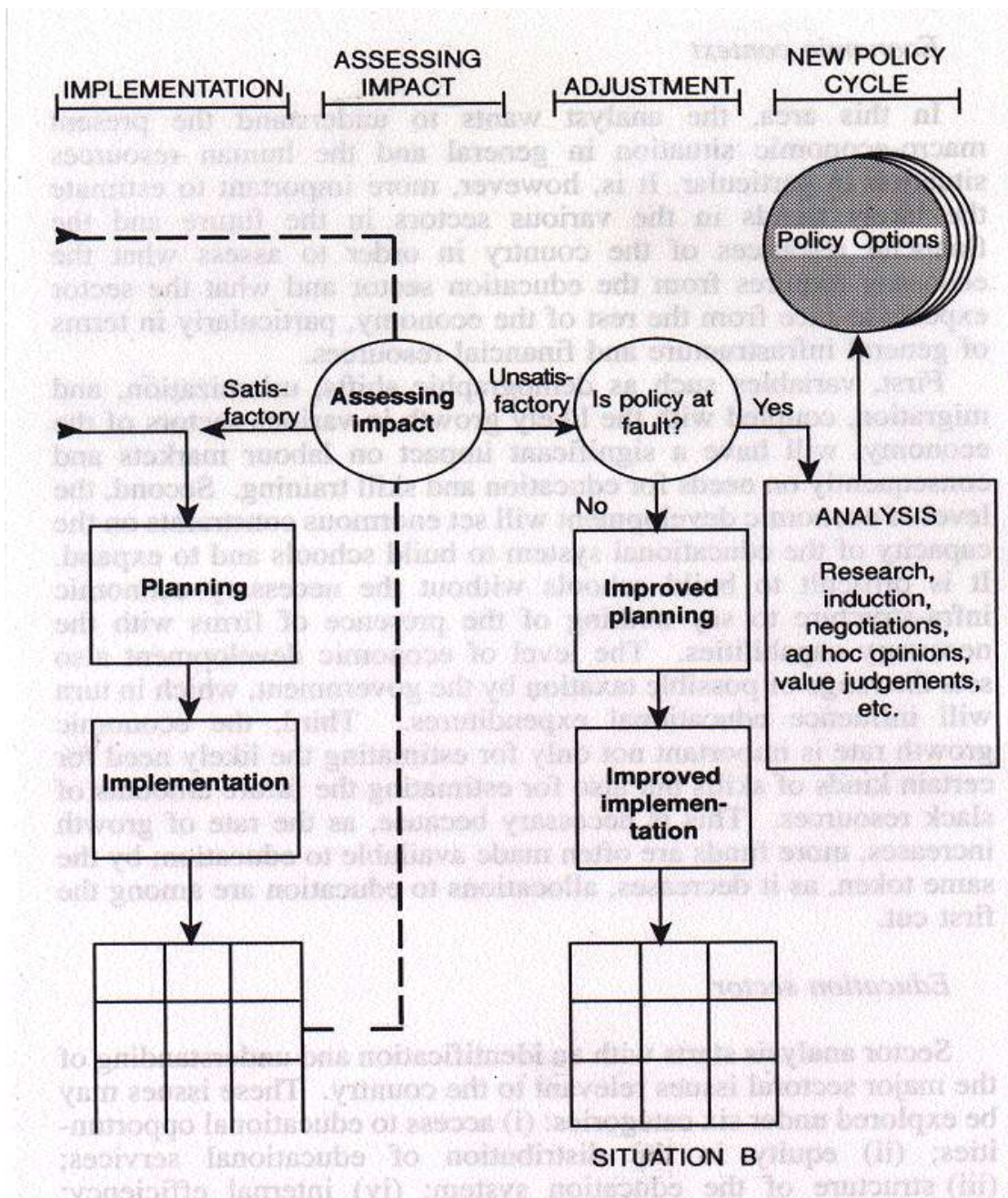


Figure 4: Haddad Conceptual Framework (B). Source: Haddad & Demsky (1995, p.27)

Haddad's framework further posits that policy options could be better evaluated if alternative scenarios are developed to allow estimations of the likely implications of the

options considered. The 'imaginary' situation that would be created, if a policy option were implemented, is compared with the present situation, and the scenario of transition from the existing to the imaginary case is evaluated in terms of desirability, affordability, and feasibility. The study was about analysing education policy formation, which required a conceptual framework. In addition, Haddad and Demsky (1995) and UNESCO (2013) give one of such most fitting frameworks thereby making their framework pivotal to the proposed study.

Having looked at policy conceptual framework, ICT related policy framework comes to the floor. Integration of any ICT intervention in the education sector requires that those entrusted with implementation of the innovation, such as teachers, welcome it with open arms and roll it out. Welcoming an innovation entails accepting it in its entirety. This is why the Technology Acceptance Model (TAM) suits this study well. TAM, according to Davis (1989) and Marikyan and Papagiannidis (2022), state that external factors (system design features) trigger cognitive responses (perceived ease of use and perceived usefulness), which, in turn, form an affective response (attitude towards using technology/intention), influencing use behaviour. Simply put, TAM represents behaviour as the outcome predicted by perceived ease of use, perceived usefulness and behavioural intention.

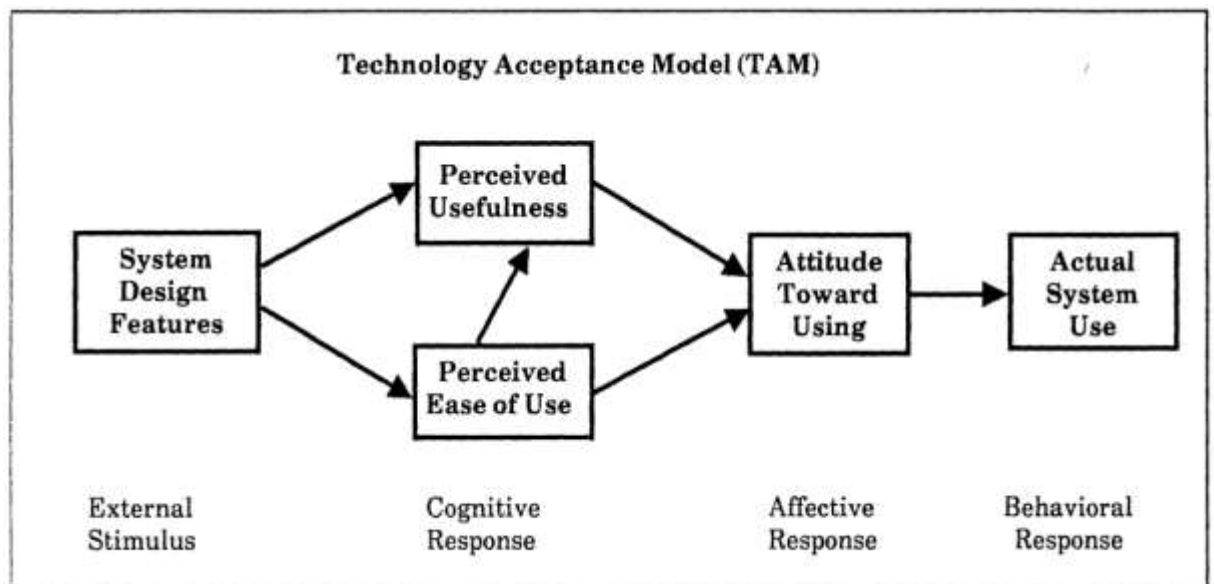


Figure 5: TAM **Source: Davis (1989, p.34)**

As can be seen from figure 5, the model implies that the more a particular technology is perceived to be easy to use and useful, the more likely the technology will be considered useful for the user, and the more likely this will develop positive attitude toward the technology and the more likely the technology will be accepted (Marikyan & Papagiannidis, *ibid*). Coming to the study, e-Registration and e-Payment policy requires acceptance from its users. The policy involves the use of the web portal, is this portal easy to use? With e-payment model, are the mobile money and mobile banking platforms user friendly? Key to unlocking answers to these questions is the use of TAM.

2.11 Chapter Summary and Research Gap

This literature review has presented issues from policy such as the definition of policy, policy cycle, models of public policy and factors influencing for policy failure. From the ICT intervention lens, the chapter focused on ICT policy frameworks in Malawi, trends in ICT use in Malawi in both the education sector and in examinations sub sector, factors affecting ICT integration in schools, theoretical perspective as well as theoretical and conceptual frameworks.

What is coming out of this literature review is that studies on ICT integration into the examinations sector, let alone analysis of formulation of such a policy, have been conducted in Kenya, (Odede, 2012), in Zambia (Milumbe, 2016), in Uganda (Capuc & Atibuni, 2017) and in Pakistan (Akbar & Qureshi, 2015). In Malawi, similar studies have been on ICT interventions in primary school (Mtemang'ombe, 2017), Open Distance and e-Learning (Msiska *et al.*, 2013), and integration of teacher ICT in teacher programs (Gondwe, 2020), among other.

It is against this background that this study set out to fill this existing gap by analysing the development of e-Registration of, and e-payment for national examinations in Malawi as developed, administered and assessed by MANEB. This would add knowledge to both the education policy and the ICT fields in Malawi and beyond.

The next chapter presents the methodology of the study.

CHAPTER THREE

METHODOLOGY

3.1 Chapter Overview

This chapter presents the methodology the study used. It presents research paradigms, research strategy, selection of participants, data generation and data analysis methods. These are detailed in the subsections that follow.

3.2 Research Paradigms

A paradigm in research plays a vital role “as it sets out the framework of thinking in which methodology is located” (Winiko, 2018). A paradigm in research, according to Bryman (2016) to a worldview about social reality namely; positivism, interpretivism and pragmatism. Positivism on the one hand posits that reality is objective, measurable and independent of the researcher, and is associated with quantitative studies. On the other hand, interpretivism, which is associated with qualitative studies, posits that reality is subjective since it is socially constructed (Kiyunja & Kuyini, 2017).

The choice of interpretivism to guide the study was informed by its recognition that people’s values, beliefs and cultural background shape their experiences; hence the need to pay close attention to these subjective experiences and interpret them accordingly (Goldkuhl, 2004). Additionally, interpretivism allows for investigation into social phenomena from various viewpoints, thereby providing a better understanding of the subject under study (Tuli, 2010). Coming to the study in question, the values, beliefs and

education background of participants were different and they gave diverse responses for the researcher to understand and interpret the data better.

3.3 Research Strategy

Research strategy is an overall plan for conducting a study that acts as a guide to the researcher in planning, executing, and monitoring the study (Johannesson & Perjons, 2014). The choice of study's research strategy is informed by both objectives of the study and indeed its philosophical framework discussed earlier on. This section, therefore, presents the research strategy as follows.

3.3.1 Research Approach

Bearing in mind research objectives and the nature of the data to be generated, the researcher settled for a qualitative research approach. The choice of this qualitative research approach was informed by characteristics of the Interpretivism philosophical framework position taken above, as both allow for in-depth study of a social phenomenon in order to generate data from participants (Grix, 2010).

Again, unlike quantitative research approach which uses numerical data and statistical analysis to answer research questions, the qualitative research approach aims to understand the meaning and experience dimensions of humans' lives and social worlds (Fossey *et al.*, 2002). As Creswell (2003) crowns it all, qualitative research approach involves exploring one key concept, asking participant general questions, collecting detailed views of participants, analysing and interpreting meaning of the information personal reflections, as well as writing a final report in a flexible structure.

It is against this background that, indeed, qualitative research approach best suited this study, which sought to get participants ambivalent views on the development of e-Registration of and e-payment for national examinations. This takes us to then next section of research design.

3.3.2 Study Design

Research design is a plan or blueprint that does not only guide a research study but also determine how data will be collected and analysed. As such, a research design should be in harmony with the research objectives and characteristics of the research topic. Among several research designs available, the researcher opted for case study design as it augured well with the topic of the study. Ridder (2017, p.1) describes case study research as one that “scientifically investigates into a real-life phenomenon in-depth and within its environmental context”. Unlike the quantitative logic, the case in qualitative case study design is selected just because the case— be it an individual, an organisation, or a problem— is of interest to the researcher (as in the present study), if not for theoretical reasons (Stake, 2005; Eisenhardt & Graebner, 2007).

a. Schools as Study Cases

The cases for this research were schools for two reasons: first, primary and secondary schools were directly affected by the policy; and secondly because the TAM targets users’ perceptions toward ICT intervention. While key participants would normally hail the policy for reducing errors and inconsistencies as per their expectations, schools through teachers and students would give a real feel of the impact of this ICT intervention on them and indeed on the registration process. Further, teachers, as policy implementers, could give great insights on whether this policy was easy to use because they might have varying levels of ICT literacy, with some requiring training and support to effectively use the system. Therefore, teachers’ views on their interface with this technological innovation could provide valuable data for this study.

On the other hand, using students as case studies in this study could help get first-hand information from students that wrote the examination using this ICT intervention. Further, the students could demonstrate the benefits of this technological innovation such as capturing of names, dates of birth and subject choices, among others; and provide valuable insights into how it could be improved to meet the needs of students.

b. Multiple Study Cases

In order to meet the study's research questions, research objectives and conceptual framework, it was imperative to study several schools, comprising all the PSLCE, JCE and MSCE examination levels.

The benefits of using multiple case studies in this study cannot be overemphasised. As Gustafsson (2017) observes, multiple case studies have the ability to present a deeper understanding of complex phenomena, to explore the diversity of experiences within a particular population, and to identify commonalities and differences across cases. Additionally, multiple case studies can provide researchers with rich and detailed data, which can help to generate new hypotheses or theories.

c. Triangulation

In order to augment the credibility and trustworthiness of findings in this study, as well as lessen the possible presence of any research biases or inaccurate information, the study used multiple sources of data technically known as triangulation. As Natow (2020) observes, information that elites provide may be biased or inaccurate. In the present study, key participants might have decided to paint an all-rosy picture, yet the situation was different on the ground. As such, use of triangulation helped the researcher verify the information provided by key participants with participants on the ground. Further, as Thurmond (2001, p.1) avers, the intent of using triangulation is to “decrease, negate, or counterbalance the deficiency of a single strategy, thereby increasing the ability to interpret the findings.”

This study therefore used *method triangulation* as it collected data from participants using different methods such as interviews and focus group discussion; and *theoretical triangulation* by using two conceptual frameworks: one on educational policy and another on ICT. This helped in getting rich data for the study. Further, the study used *data source triangulation* since it also collected data from different types of participants in order to gain multiple perspectives and validation of data (Triangulation, 2014).

3.3.3 Study sites/locations

The study was conducted in three education districts in the central west education division. These districts were selected as for being easily accessible to the researcher. Locations' easy accessibility to the researcher was advantageous to the study as below:

a. Effective Resource Utilisation

Considering the limited resources at disposal for the study, the researcher did not have the luxury of travelling far and wide to generate data when participants with the same characteristic were just next door. This, therefore, maximised the utilisation of +resources for the study.

b. Timely Data Generation

Taking into account the need for relevance in research, where any delays in completing a study could see the topic overtaken by events, conducting this research closer to home helped the researcher to conclude the study within the specified study time. This ensured the potency and relevance of the research topic.

c. Quality Data Generation

Collecting data in easily accessible sites helped the researcher not to be exhausted with travel logistics and the traveling itself. This allowed the researcher to concentrate on the data generation alone, instead of nursing the fatigue from travelling thereby ensuring high quality of the data collected.

Further, the researcher's intimate knowledge of the organisation, being the organisation's employee, provided treasured insights and deep understanding that external researchers might have lacked. This enriched the depth, clarity and quality of the generated data. The researcher addressed potential research bias by using multiple data sources such as interviews, focus group discussions and document analysis, resulting in quality data generation

In summary, easy access to study locations was not only convenient to the researcher but also a strategic way of ensuring that the study was conducted within the limited resources, limited time and limited travelling thereby ensuring quality data generation.

3.4 Data Generation

Data for the study was generated as explained in the subsections that follow.

3.4.1 Study participants

The study drew participants from MANEB in Zomba; District Education Management Offices, Primary Schools, Secondary Schools, Teachers Union of Malawi, Independent Schools Association of Malawi, Secondary Schools Teachers Union of Malawi; and Parents-Teachers Association, all based in Central West Education Division.

3.4.2 Selection of Participants

The study used the non-random purposive sampling technique to select participants for this study. For this reason, the researcher used a pragmatic purposive sampling approach where selection of participants considered their availability, accessibility, willingness to participate and participant's knowledge or experience in the topic under study (Creswel, 2013).

As for participating schools, they were selected based on the following:

- a. Schools that registered candidates for the 2022 PSLCE and JCE examinations using the e-Registration platform
- b. Schools with forms one and three students who wrote their 2022 PSLCE and JCE examinations as they were registered electronically.
- c. Proximity to the researcher
- d. All weather roads to the schools

3.4.3 Number of Participants (Calculations)

Unlike in quantitative research, a decision on the total number of participants in qualitative research does not depend on statistical formulae. Rather, sufficiency of the number of

participants depends on a balance between the research purpose and reasons given under selection of participants above.

On the actual number of participants, different scholars range it differently from as low as four to as high as 50 (Creswel, 2023; Marshall *et al.*, 2013; Malterud *et al.*, 2016; Saunders & Townsend, 2018). In this study, however, the researcher selected 34 participants as a starting point. In a situation where the study was to fail to reach theoretical saturation with this number, the researcher would have engaged more participants with the similar characteristics to achieve the saturation.

The 31 participants comprised senior MANEB officials as key participants representing the institution that formulated the policy in question. District education officials were selected since MANEB delegates them with tasks of managing examination related activities in their districts. Teachers from primary and secondary school (from both rural and urban) were selected because they were the ones expected to make this policy work. Some Form Ones and Form Threes students also participated in the study as they were directly affected by the policy along their academic journey.

Participants were drawn from stakeholders who were directly affected by changes in examinations policy, such Independent Schools Association of Malawi (ISAMA), Teachers Union of Malawi (TUM), Secondary School Teachers Association of Malawi (SESTUM) and Parents Teachers Association (PTA).

Table 1: Study participants

S/N	Participants	Total
1	MANEB Officials	2
2	DEMO A	2
3	DEMO B	2
4	Head teacher and school examinations officer for one primary and one secondary schools in education district A	4
5	Head teacher and school examinations officer for one primary and one secondary schools in education district B	4

6	ISAMA	1
7	PTA	1
8	TUM	1
9	SESTUM	1
10	Forms 1 and 3 students from the two secondary schools	13
Total		31

3.4.4 Data Generation Instruments

The study used several instruments to generate data namely; semi-structured interviews, documents analysis and focus group discussions. These are discussed in the following subsections.

a) Semi-structured Interviews

Semi-structured interviews in this study involved asking questions and gathering information from the study participants. This instrument was preferred for its ability to get best answers in prose rather than in numbers (Beck & Manuel, 2008).

The interviews were therefore structured, with a set of predetermined questions, allowing for some freedom; and completely unstructured, allowing for a more conversational and flexible exchange of information. As Meyer (2001) advises, researcher built rapport with the interviewees and that led to successful interviews.

b) Focus groups

The study also used focus group which involved assembling a small homogeneous group of participants to discuss the subject under study (Powell & Single, 1996). This offered a variety perspectives and experiences through participants' interactions during the highly participatory discussions (Gibbs, 1997). The study, therefore, used focus group to get views from students and this helped the researcher gather rich data for interpretation as Morgan & Hoffman (2018) recommend.

c) Document Analysis

In this study, document analysis allowed the researcher to systematically evaluate and interpret printed and electronic materials in order to elicit meaning, gain understanding, and develop empirical knowledge (Bowen, 2009). The researcher, therefore, analysed documents related to the topic in question such as newspapers, PowerPoint presentations, strategic plan, press statements and the Internet in order to have a vast understanding of the phenomenon. This allowed for identification of attitudes, beliefs, actions, policy direction and organizational requirements (Zeegers & Barron, 2015).

Table 2: Data Generation Instruments

Data Generation Instruments	Participants
Semi-structured interviews with key participants	MANEB officials
	DEMO officials
Semi-structured interview with participants	Head Teachers & Examination Officers
	ISAMA, PTA, TUM, SESTUM
Focus group discussions	Forms 1 and 3 students

3.5 Data Management Methods

Below are the strategies and procedures that the researcher used to handle, store, and analyse qualitative data for this study which was generated through semi-structured interviews, focus group discussions, and document analysis for the study.

3.5.1 Semi-Structured Interviews:

Transcribing the interviews word for word.

Keeping field notes in file

3.5.2 Focus Group Discussions:

Transcribing the discussion word for word.

Keeping observation notes in file

3.5.3 Document Analysis:

Gathering appropriate documents for analysis.

Turning the documents into softcopies to ease access.

Devise an orderly coding system for document analysis.

3.5.4 Data Organisation

The generated data was organised through use of folders and proper naming of the folders as discussed below:

a. Use of Folders:

- Creation of a special thesis folder which further contained subfolders for data generated from interviews, focus groups, and document analysis.
- Subdivision of folders by participant or theme for easy recovery.

b. Naming of Files:

- Files named consistently to ease retrieval.
- Inclusion of fine details such as participant code, date, and data type in file names.

3.5.5 Data Security

Security of the generated data was of paramount importance as shown below:

a. Password-protection:

The data in the folders was password-protected to assure maximum confidentiality

b. Participant Anonymity:

- During transcription and analysis, participant names were replaced with codes.
- Participants' raw data was stored separately from their personal identification.

3.5.6 Data Back-Up

- ##### **a.**
- There was a scheduled back-up of all the data.

- b.** Back-ups were further stored on secure external hard drives and on google drive.

3.5.7 Data Sharing and Archiving

a. Ethical Considerations:

- i.** There will be full compliance with ethical guidelines governing data sharing.
- ii.** Participants will give informed consent for possible data sharing.

b. Archiving:

- i.** Final datasets and documentation will be archived for future reference.
- ii.** Data will be stored in a secure repository that aligns well with ethical standards.

c. Publications:

- i.** Sources of data in publications and presentations will be acknowledged accordingly.
- ii.** Upon request, anonymised datasets will be shared in adherence to ethical standards.

3.6 Data Analysis

Qualitative data analysis involves examining non-numerical data, such as text, images, and audio recordings to identify themes, patterns, and meanings. The importance of detailing how data analysis will be conducted, and the effectiveness of such information to the reader, cannot be overemphasized. Based on the conceptual framework as presented in the literature review, policy development is not a haphazard activity but a meticulous one. For the study to analyse whether the policy in question was, indeed, meticulously developed, the researcher analysed generated data and reports accordingly using Framework Analysis. The following section, therefore, presents the Framework Analysis approach, which is a series of interconnected stages that enables the researcher to move back and forth across the data until a coherent account emerges (Ritchie & Lewis 2003). This allows for

continuous improvement of themes that may lead to the development of a conceptual framework (Smith & Firth, 2011).

3.6.1 Data Analysis Framework: Framework Analysis

Framework Analysis involves a five-step process, namely; *familiarisation, constructing an initial thematic framework, indexing and sorting, reviewing data extracts, and data summary and display* (Ritchie & Spencer, 1994) as follows.

a. Familiarisation

Familiarisation stage involves the researcher mastering all the generated data such as transcripts from interview or focus group transcripts, observation and field notes in order to have a general picture of the available data. It is here where the researcher know what people are saying that is relevant to the research questions (Ritchie & Spencer, 1994; Kiernan, & Hill, 2018).

b. Constructing an initial thematic framework

Having acquainted oneself with participants views related to the research questions, the researcher will proceed to constructing an initial thematic framework. At this stage, researcher will identify developing themes or issues in the data set from key issues, concepts and themes from the data (Srivastava & Thomson, 2009; Smith & Firth, 2011). Put simply, the researchers here will decide a set of headings under which data will be organised. This will form the basis for developing a thematic framework with which to filter and classify the data.

c. Indexing and sorting

This is a third stage in which the researcher will identify or label parts of the textual data, such as recorded interviews or focus group discussions transcripts, that tally with a particular theme.

d. Reviewing data extracts

Having indexed the textual data, *Charting* follows. In this stage, the researcher will review the initial or priori themes and refine labels. The researcher will further explore other ways of organizing the data in order to explain them better (Srivastava & Thomson, 2009; Smith & Firth, 2011).

e. Data summary and display

In this stage, the researcher will summarise what each participant is saying about a particular theme (Srivastava & Thomson, 2009; Smith & Firth, 2011). It is here where the researcher will further write precis for each subtheme and each person in the study; and provide a schematic diagram of the event/phenomenon to guide in the interpretation of the data set (Ritchie and Spencer, 1994, p.86). Figure 8 presents the diagram:

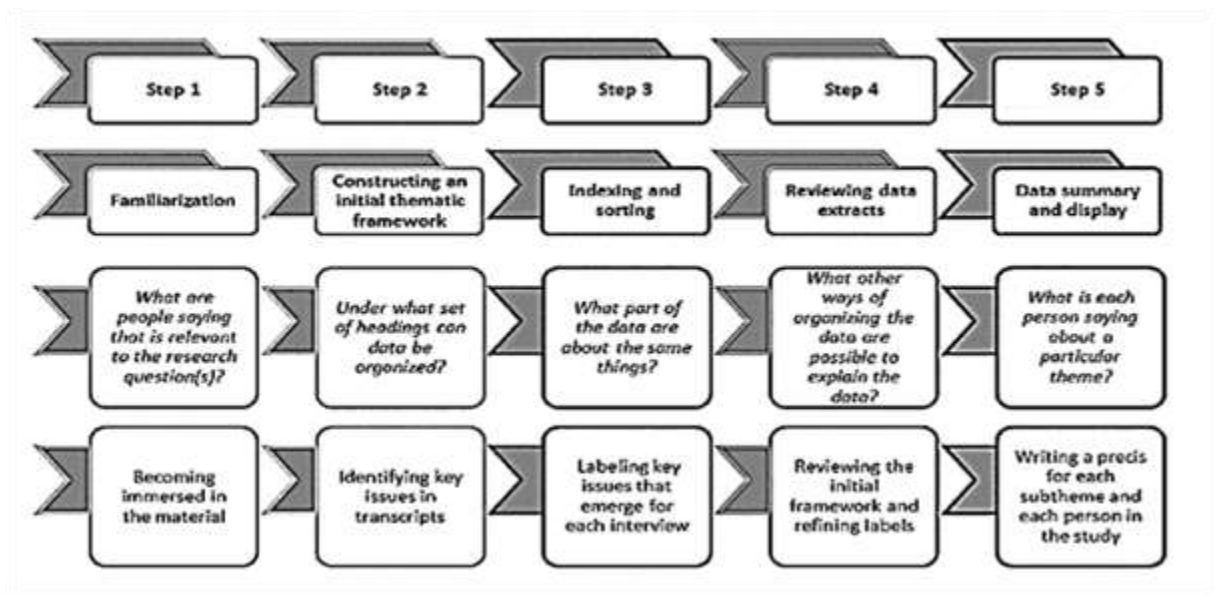


Figure 8: Five-step process in Framework Analysis. Source: Ritchie and Spencer (1994)

3.6.2 Rationale for Framework Analysis

The rationale for using framework analysis included, but not limited to, the following:

Firstly, Framework Analysis offers both systematic and transparent analysis as it provides a systematic and transparent approach to analysing qualitative data. This is because it allows researchers handle the data using prearranged procedures: a step-by-step process that helps researchers organize and make sense of large amounts of data. This, this therefore, ensures a systematic model for managing and mapping the data (Gale et al., 2013; Nili et al., 2017)

Secondly, Framework Analysis focuses on participants due to its detailed outline. As such, the researcher focuses on observations of the participants. The Charting and Summarizing in stage four allow the researcher to consider how themes occur across interviews (columns), while still being able to consider a particular participant (row) (Hackett & Strickland, 2018).

Thirdly, framework Analysis is both dynamic and versatile. It is dynamic in such a way that it allows a researcher to make changes where necessary throughout the entire process, which enables researchers to adapt to unpredicted issues during the study. As regards flexibility, it can be adapted to different research questions and data types as well as allowing a researcher to use pre-existing frameworks or develop their own based on the research objectives (Nili *et al.*, 2017).

Finally, yet more importantly, Framework analysis is rigorous, replicable and allows for informed decision-making. Since the analysis involves multiple stages of data coding, analysis, and interpretation; this can easily be checked and verified by other researchers. Again, Framework Analysis' provision of a structured approach to analysing complex data sets can help identify key themes, patterns, and relationships in the data, which can then be used to inform policy and practice (Gale *et al.*, 2013; Hackett & Strickland, 2018)

3.7 Research Dissemination Strategy

Conducting research and keeping the findings in the drawer is a good as lighting a lamp and covering it. Surely, the lamp will not illuminate the surroundings; nor will the research

findings enlighten the society. Dissemination research findings is, therefore, fundamental to any research project. As Marín-González, *et al* (2017) put it, effective dissemination of research findings is essential as it guarantees that the research will be absorbed by the society and bear the anticipated fruits in social, political, or economic settings. Above all, research dissemination attracts the attention of governments and stakeholders to research results and conclusions, thereby enhancing the finding's visibility, comprehension, and implementation.

This is why results for this study will be disseminated through various platforms in order to reach out to the wider society and attempt to make a positive impact on the society. The researcher will thus disseminate the report through academic publications such as academic journals; in conferences and presentations; in open access publishing platforms for free access; and indeed through the social media and online publications such as LinkedIn, Twitter, Facebook and ResearchGate (Cooper, 2014), just to mention a few.

3.8 Ethical Considerations

Conducting research calls for respect and protection of human subjects. This is done through the application of appropriate ethical principles in all research study. Ethical considerations become very important in qualitative research for its in-depth nature of the process, according to Arifin (2018). Such ethical considerations include acquiring informed consent and voluntary participation, ethical approval and access to participant, as well as privacy and confidentiality of the respondents and their responses. This study, therefore, abided by ethical considerations as follows.

3.8.1 Acquiring informed consent and voluntary participation

Participants in this research were adequately informed about the research to allow them understand the information and voluntarily decide whether to participate in the research or not. The researcher approached individual potential participants and explained the purpose of the study and data generation process. The potential participants had an opportunity to ask questions. After a rigorous explanation of the research process, and participant's

voluntary acceptance to take part in the research, the researcher obtained participant's written agreement to take part in the study. In the case of minors, the researcher sought parental consent from respective parents or guardians. Notwithstanding the written agreement, participants had the liberty to withdraw from the study even when the study is in progress, as that could not affect them or the research negatively (Arifin, 2018; Connelly, 2014).

3.8.2 Ethical and Permission Approval

The researcher got approval to conduct this study to the University of Malawi Research Ethics Committee (UNIMAREC). UNIMAREC is an institutional research ethics committee of the university with a mandate to safeguard the safety, rights and wellbeing of human subjects involved in research conducted by UNIMA faculty members, staff, students and their collaborators and affiliates. It further reviews and approves of ethics and research protocols from all UNIMA staff, students and affiliated (UNIMA, 2023).

The researcher also got approval from MANEB to study their policy and use some of its staff as key participants. The researcher got another approval from the Ministry of Education to conduct the study using participants from their institutions such as schools and district education management offices.

3.9 Privacy and confidentiality

The importance of privacy and confidentiality when conducting ethical research with human participants cannot be overstated. According to Folkman (2000), privacy refers to a person's interest in controlling other people's access to information about him or herself; whereas confidentiality refers to the right to maintain private information divulged in the course of a professional relationship with a researcher

As Ethicist (2015), Flewitt (2005), Sage (2018) and Wiles *et al.*, (2008) emphasise on the importance of privacy and confidentiality, the researcher ensured privacy and confidentiality by identifying participants using numbers instead of actual names in all data

records. Electronic files, such as interview recordings, were stored in separate electronic folders and with different passwords on both personal computer and dedicated external hard drive. The data was stored daily after a day's data capturing; and the remaining data in the recording device. All hardcopy research documents, such as field notes and handwritten interview notes, were stored in a locked cabinet for reference during research report writing.

Further to this, the researcher stored all signed consent forms, master participant lists and contact information sheets away from the document with participant data. Hard copies of these documents were stored separately in locked cabinets. After re-identification of participants, where necessary, the researcher destroyed immediately all documents that could allow for a participant to be re-identified— such as the master list of participant identifiers— after the completion of the research.

3.10 Potential risks

For the purposes of this study, no participant will be exposed to any situation that may cause physical or psychological discomfort or injury. Every participant will have a right not to allow or respond to question which they may consider sensitive, private or which they are not comfortable with.

As for potential risk to MANEB, there is no risk at all. In fact, MANEB stands to benefit from the research since the findings will act as feedback from the stakeholders on the ground. MANEB may, therefore, capitalized on such feedback to improve on the just rolled out e-Registration policy as well as future policy formulation.

The researcher, therefore, adhered to the above-mentioned ethics by getting approvals from UNIMAREC, Ministry of Education and MANEB. Further the researcher acquired informed consent from willing participants, as well as ensuring privacy of participants and confidentiality of data.

3.11 Limitations of the Study

The study faced some challenges during data generation stage. The first challenge was the change of officer bearers due to postings. For instance, at the two district education offices, which were on the schedule, both the CEOs and their deputies were new to the office such that they had limited knowledge in some areas. However, since some were heading or teaching in secondary schools, they displayed a clear understanding on the policy and handled the interviews satisfactorily.

The second challenge was difficulties to get parental consent forms signed for some learners participating in the study. Some of the learners were on self-boarding, meaning they could not go back to their parents and guardians just to sign the forms. Nevertheless, this was resolved with only three out of the 16 forms not returned. Gladly, the data had already reached saturation point hence missing three participants could not adversely affect the study.

Overall, these limitations did not compromise the study in anyway as their impact was negligible if not non-existent as already explained above.

3.12 Chapter Summary

This chapter presented the methodology used in this study. It presented research paradigms, research strategy, selection of participants, data generation and data analysis methods. The next chapter presents findings of the study.

CHAPTER FOUR

FINDINGS

4.1 Chapter Overview

This chapter presents findings from the interviews of this study based on the themes identified from the data and as prescribed by Framework Analysis which guided this study's analysis and communication of the findings. The findings have been organised to depict both themes and units related to technological intervention in a form of an educational policy as seen from Framework Analysis lenses.

The study was conducted from 3rd to 9th February, 2024. It involved interviewing 18 officials and 13 students, giving a total number of 31 participants. The participants interviewed using semi-structured questions for a duration of five to 15 minutes were; two key participants from MANEB, four district education management officials from two education districts in the Central West Education Division (CWED), four head teachers and four examination officers from two primary and two secondary schools in CWED, one TUM officer, one ISAMA officer and one PTA member. Those that participated in focus group discussions were Forms One and Three students, all from the Central West Education Division.

4.2 Presentation of Findings

The study sought to analyse the formulation of e-Registration policy to effectively replace the traditional manual registration for national examinations. The study further

explored whether MANEB indeed followed best practices for policy formulation since this directly influences policy success or failure during implementation. Finally, the study sought people's views on whether e-Registration has the potential to exclude disadvantaged learners from accessing examinations.

In order to ease presentation, the findings have been presented with the aid of Framework Analysis and according to the research questions. Let me state at the outset that questions posed to the categories of interviewees were not uniform since the nature of questions depended on the interviewee category and, of course, given responses. For instance, while key participants were asked about the policy formulation process, users were asked about how they understood the e-Registration Policy.

Findings have been deliberately separated from the discussion in order to avoid the researcher's opinion infiltrating the findings since data need to speak for themselves. As such, blending findings with discussion in the same chapter could only succeed in spoiling the logical flow of the presentation.

The presentation of the findings starts with research questions and listed under themes, includes extracts from document analysis, media reports as well as verbatim quotes and interviews translated into English where Chichewa was used. This has been done to give a real feel of the interviews with participants. I must make a disclaimer at the beginning that the focus of this study was on policy development. However, since the study was conducted after schools had already interfaced with the policy, they were responding based on their actual experience with the policy. This also helped the researcher to get practical responses from the participants.

4.3 Research Question One: Conceptualisation of e-Registration Policy

This research question aimed at unearthing the historical background to the policy under discussion. The question further wanted to find out how the policy was conceptualised, why it was necessary to come up with this policy and, indeed, how MANEB managed the whole policymaking process. This question was posed specifically to the study's two key

participants who took part in the development of the policy. Further information on this came from document analysis. The findings are presented below in themes, in line with Framework Analysis.

4.3.1 Policy Conceptualisation

Findings show that the e-Registration policy is a brainchild of MANEB. Key participants and document analysis show that the management, having identified needs to be addressed, opted for e-Registration. A key participant from MANEB stated that:

The e-Registration policy, though not written, was [conceptualised] by [MANEB] management, having looked at the enormous queries that we had, the queries that management used to receive from various [examination] centres. So, they thought e-Registration would help reduce the number of queries that come from various centres regarding registration of examination data. So, in short, management initiated it.

Another key participant from MANEB also stated that indeed it was MANEB that conceptualised the policy, adding that poor management of examinations fees and registration errors were part of the forces behind the birth of the idea to have e-Registration. He narrated:

It was due to the fact that MANEB wanted to address the numerous problems at school level. And these were due to maladministration of examination fees and poor capturing of data for candidates by [some] administrators. So, this is what led us to have a change [that] maybe if we do something else, some of these [challenges] would not be there. So, I've said wrong capturing of data and misappropriation of examination fees.

Attesting to the key participants' responses, MANEB is first seen conceptualizing to go fully electronic in the registration of candidates in its Strategic Plan of 2016-2021 (MANEB, 2016). In this Strategic Plan, MANEB set a first goal which was *well-managed national examinations and assessment systems*. The first outcome of this goal was

improved management of national examinations. It is from this outcome that *e-Registration and e-Payment of examination fees* was coming out as a first output.

Document analysis further show that, before the expiry of the strategic plan, came Equity with Quality and Learning at Secondary (EQUALS) project. MANEB, therefore, sold the e-Registration policy and secured funding from EQUALS project with which it upgraded its ICT capacity to support e-Registration. MANEB further engaged various stakeholders, developed standard operating procedures, brochures and oriented users of e-Registration on how to operate it. MANEB further partnered with commercial banks and mobile network providers (MNOs) to make e-Payment work. The e-Registration was first piloted in Zomba for the 2021 examinations; in the South Eastern, Central West and Northern Education Divisions for 2022 examinations and the whole country for the 2023 examinations (MANEB, 2022).

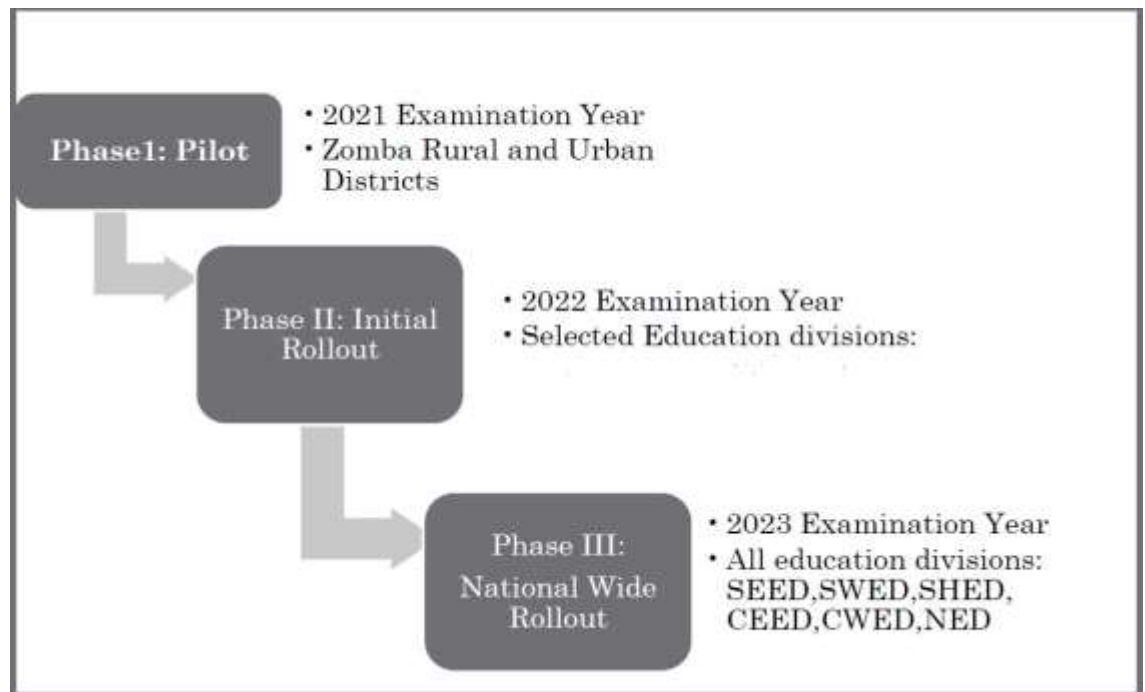


Figure 9: e-Registration rollout phases. Source: MANEB (2022, slide 6)

4.3.2 Problem Identification and Motivation for Change

Regarding problems which MANEB was facing and acted as a motivator for change, findings show that the conceptualization of e-Registration was triggered by enormous and persistent queries. These queries were from examination centres and parents or guardians on examination registration from schools and parents.

Further document analysis indicates that the ever-rising candidature also informed the decision to go electronic with registration in order to ease workload.

MANEB (2021), for instance, says the previous registration process was mostly manual; hence, [it] failed to cope with the increasing candidature. This was because much as MANEB was providing schools with softcopies of excel templates for registration, schools were still required to print out such data and provide the printed copies and hardcopies of passport size photos for ID production on. ID processing team was then converting and editing the individual photos back to softcopy form, ready to use a candidate ID, hence the job becoming daunting especially with high candidature.

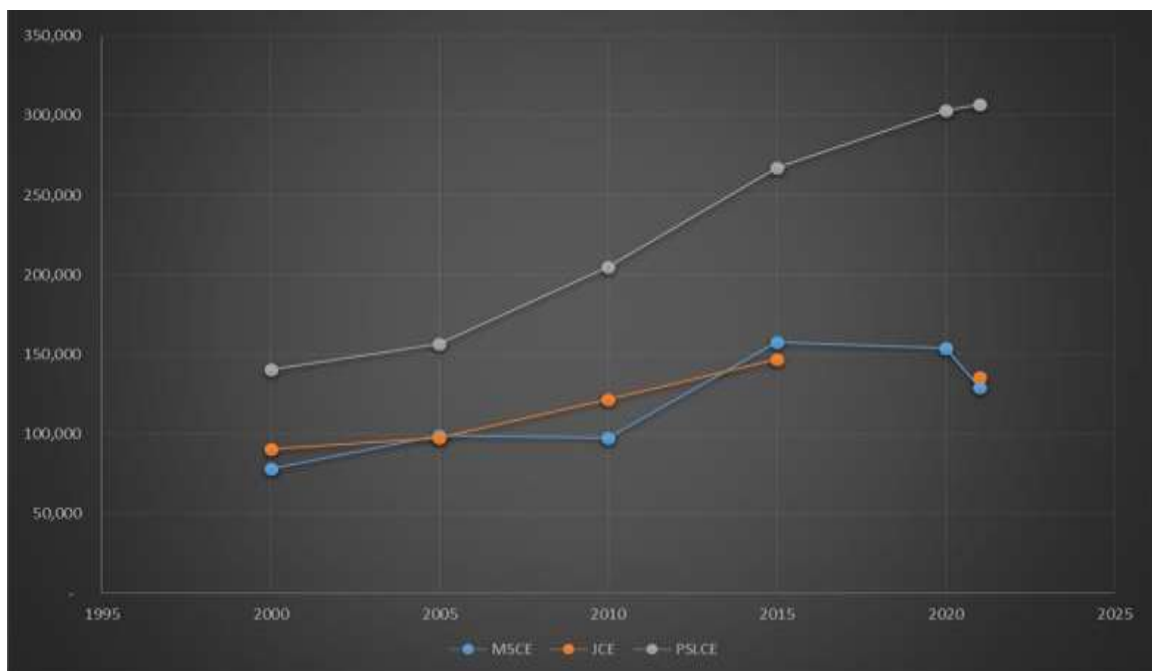


Figure 10: Trends in candidate registration over a 20-year period. Source: Nampota (2022, slide 6)

On registration queries, both documents analysis and key participants showed that this was a big problem since there were multiple sources of errors, such as at the examination centre, at the DEM level and at MANEB; hence, the motivation to go electronic. A key participant from MANEB shared:

There were so many errors resulting from the manual process because... although schools would capture data into Excel sheets, the biggerbody of it was manual; beginning with conversion from Excel to Access database that we were using at that time. There were so many errors. So, MANEB would receive so many errors; and that would increase workload on thepart of computer services [ICT] department. So, this was one of the major driving factors.

In addition to the manual registration errors and excessive workload as reported in the verbatim quote, findings further revealed another contributing factor, which was misappropriation of examination and ID fees paid by unsuspecting candidates. Both key participants stressed that misappropriation of examination fees was a perennial problem with some school operators. They said such schools could collect examination and ID fees from candidates but not remit the same to MANEB. This resulted in innocent learners failing to write examinations for non-payment of examinations fees; hence, the idea to go e-Payment toavoid such embezzlements. This is further discussed under research question two.

A burning desire to get rid of immense paperwork was yet another contribution to the conceptualisation of the policy. MANEB was involved in the printing and reprinting of the nominal rolls for around 8,000 primary and secondary schools and teacher training colleges. As the key participants said, all the printed nominal rolls had to be physically delivered to all the 34 education districts in Malawi. It did not end there. Upon the release of examination results for all the four levels namely PSLCE, JCE, MSCE and PTCE, MANEB was furtherobligated to hand-deliver the results to all districts within the shortest period of time even if it meant delivering at awkward hours. However, with e-Results component of e-Registration, examination results are accessible at the speed of

lightening as another key participant shared:

Another one is to ease access to examination results. The country is able to access the results online. The moment we say the results are out, everybody in the country is able to access those results securely over the internet.

4.3.3 Stakeholder Engagement

Findings indicate that MANEB engaged internal and external stakeholders through preliminary meetings and consultations during and after policy formulation.

A key participant from MANEB disclosed that part of the engagements was a mini-study which MANEB conducted on e-Registration with the aim of assessing the practicability of introducing electronic registration for examinations. He explained:

MANEB conducted a mini-study in which they visited all the examinations centres. The purpose of the visits was to check if at all centres could successfully implement the policy. Analysis from that study's findings showed that it was indeed practical to implement e-Registration.

Apart from examination centres, the engagement further involved government institutions such as the Malawi Communications Regulatory Authority (MACRA) and the e-Government Department to provide policy and ICT regulatory guidance. Further engagements involved commercial banks and MNOs such as Telecom Networks Malawi (TNM) and Airtel, resulting into the signing of inter-partes memoranda of understanding in support of the e-Registration (MANEB, 2021).

Confirming MANEB's holding of stakeholder engagement activities, an ISAMA official said he remembered to have participated in the policy's preparations and contributed to its formation:

We, as ISAMA, were part and parcel of the meetings that MANEB used to conduct across the country and at different levels like national, district, cluster and school levels. We also went around the country informing [our] members about the new

system of registration whereby learners will be using the electronic way of registration.

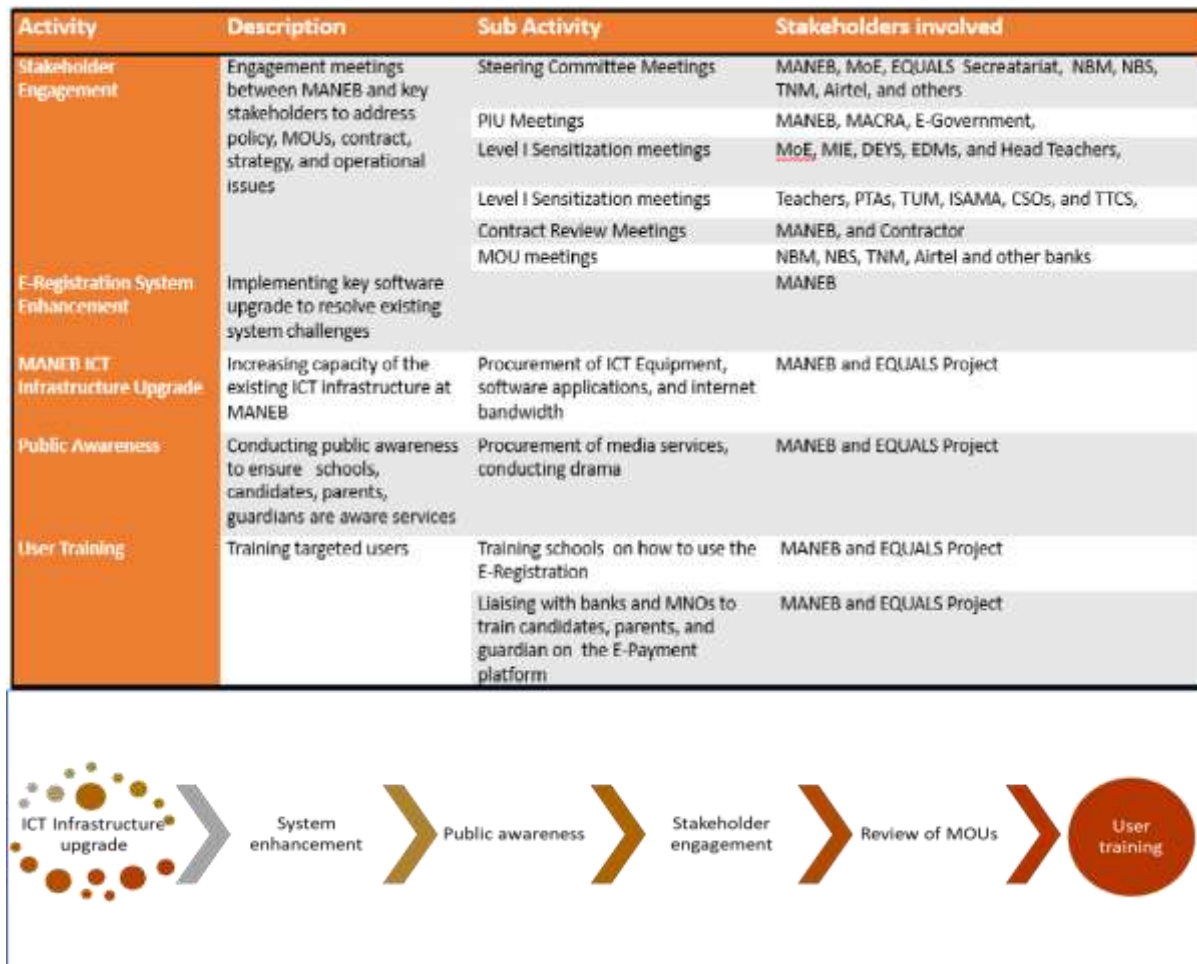


Figure 11: Initial processes plan. Source: MANEB (2023, slides 12 &13)

4.4 Research Question Two: Improved Registration

Findings show that examination process is a cycle of activities, not an event. Being a cycle, a new cycle of examinations begins where the other cycles ends; hence making it a laborious activity, highly prone to errors.

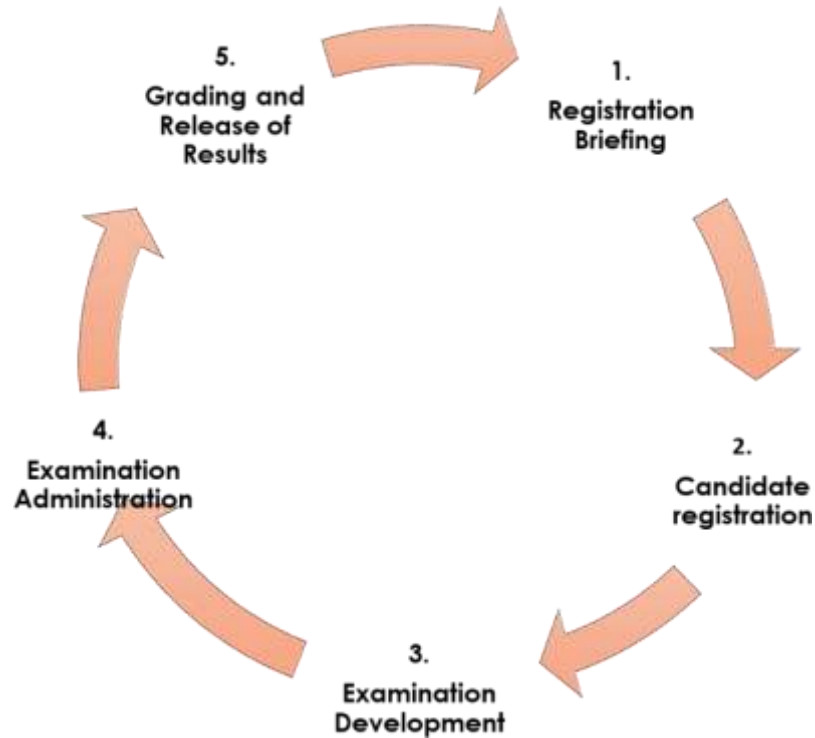


Figure 12: MANEB examinations cycle. Source: Nampota (2022, slide 4)

With this cycle, the manual processes as described in chapter one were creating many challenges; hence, the introduction of e-Registration to address the challenges.

Both, documents analysis and participants, provided responses which addressed this questions. Therespponses have been organised into themes namely: *Efficiency and Error Reduction, Embezzlement, and Cost-Cutting* as presented below:

4.4.1 Efficiency and Error Reduction

Findings show that with the erstwhile manual registration, there were several flaws which continued to give issues every year. For instance, with the manual registration, labour was duplicated hence slow processing as the same data was manually handled by several offices, creating room for errors as a key participants shared:

e-Registration has really improved on efficiency in the process of [data] capturing because once the centres capture data, it's there and then that the data gets into our

database. So, there is efficiency. And errors are checked by the system. So there is quite remarkable efficiency and also speed in terms of processing of the data; because [previously] we would spend weeks and weeks converting excel sheets to access because that would involve physically checking the data, each sheet, before converting it to access. So that would take a lot of time, probably three or four weeks. But this time, once data [including ID photos] is captured at the centre, there and then it gets into our database; and we can access it in real time.

A head teacher agreed that e-Registration has reduced errors that were otherwise common when using the manual registration:

When you use the manual registration, we could register students and send the data to MANEB. You know, we have so many schools in Malawi and for MANEB officer(s) to check all the registration data for all the schools in Malawi, it was too involving, cumbersome, and easy to commit an error because human beings are also prone to being exhausted.

In so doing, it's easy because if in a case that you notice an error, you can just have the error corrected at school level instantly. So, that's quite an improvement and a very good development because it's fast and not time-consuming at all.

A district education management official added that e-Registration is effective, quick and does not allow for delays in registration

Yeah, it's effective. The speed is there, accuracy is there, everything is improving. It has really improved the accuracy and the speed itself.

As regards the past, we had some errors, we had some delays, some head teachers were delaying and some were failing to capture information in the right way. But then with the online registration, everything is fine, it's checked, and the money is there [paid directly to MANEB]

On error-free candidate registration data, document analysis shows that once online registration is complete for a particular candidate, it generates an invoice reflecting all the

registration data for that particular candidate. This invoice is then given to the candidate for verification with parents or guardian. Once satisfied that all the data on the invoice is correct, they could proceed to pay. If there is any error, that error is brought before the school for correction before payment is made. This therefore assures accurate data from the source.



Malawi National Examinations Board

SIMEON MAGANGA

Gender : M

Date of Birth : 6 Feb 1982



Malawi National Examinations Board

P.O.Box 191

Zomba

Malawi

Exam Level : MSCE

Entry Type : INT

29 March 2024

Invoice

Invoice No.

32607212441812

Qty	Description	U.Price (K)	Line Total (K)
1	Entry Fee	3,250.00	3,250.00
1	Form Fee	0.00	0.00
1	Administration Fee	1,750.00	1,750.00
1	Identity Card Fees	4,000.00	4,000.00
1	Centre Fee	1,750.00	1,750.00
8	Subject Fee	2,000.00	16,000.00
	AGR AGRICULTURE		
	BIO BIOLOGY		
	CHI CHICHEWA		
	CHE CHEMISTRY		
	ENG ENGLISH		
	GEO GEOGRAPHY		
	MAT MATHEMATICS		
	PHY PHYSICS		

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School Name :	MAGANGA PVT SECONDARY				
Entry Type :	INT	Exam Level	MSCE	Centre No :	2098
District Code :	26	District Name :	BLANTYRE RURAL		
Reg. Start Date :	18-Jan-2023	Reg. End Date :	22-Apr-2024	Payment Due:	31-April-2024

Any corrections (eg Wrong name, subjects) must be made at your centre before making payment

Malawi National Examination Board

+265 1 625 277 / 1 625 212

Figure 13: Sample invoice of an MSCE candidate. Source: MANEB (2021:16)

4.4.2 Embezzlement Prevention

Document analysis, interviews and media reports indicate that embezzlement of examination fees during the manual registration error was rampant. Figure 14 shows media reports on examination fees embezzlement.



Figure 14: Media reports on embezzlements. Source: Kumbani (2016) & Kaude (2017)

While expressing concern over the embezzlement of examination fees in the previous manual registration, a key participant explained that e-Registration was designed to inhibit this vice through e-Payment. Through e-Payment, as shown in the diagram below, a candidate, parent or guardian pays direct to MANEB via mobile money or mobile banking platforms. This, therefore, cuts off schools' access to examination fees; hence, eliminating chances of embezzlement. However, all this depends on the mind-set of the parents to stop paying through the school and trust the e-Payment. Figure 15 below show visualisation of the e-Payment.

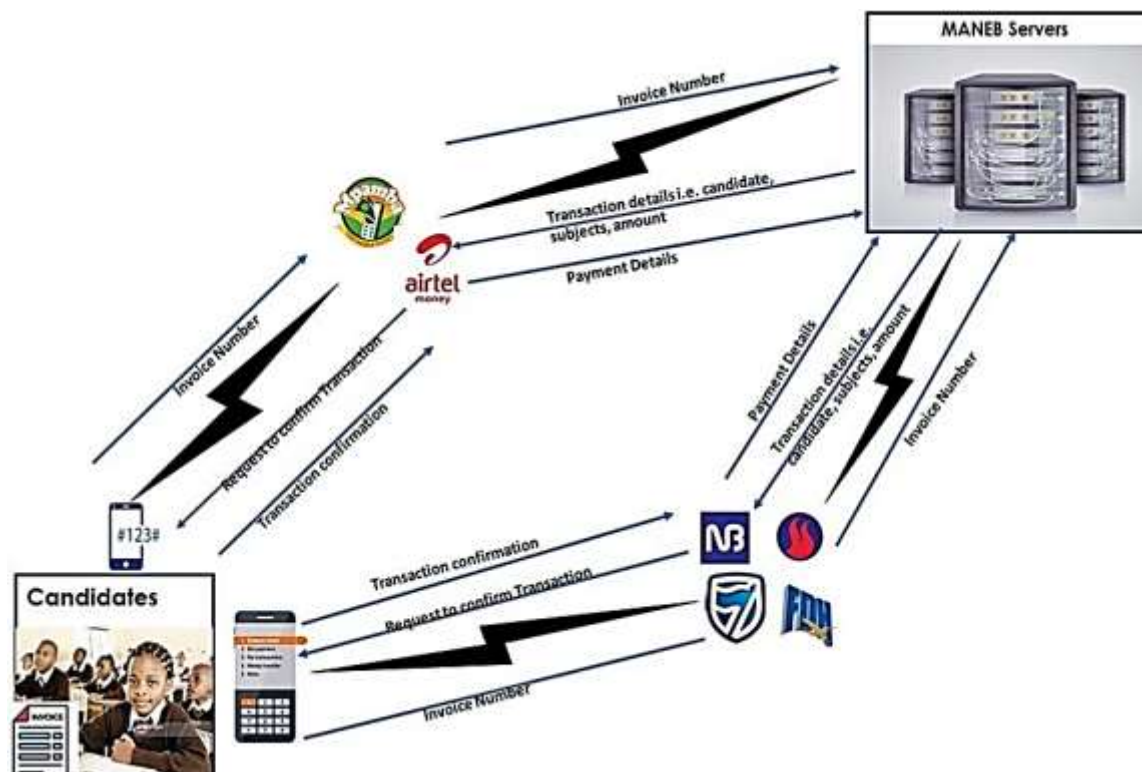


Figure 15: Visualisation of the e-Payment. Source: MANEB (2022, slide 4)

A student from a rural community day secondary school agreed with the key participant, saying e-Registration, especially with its e-Payment component, saves them from possible examination fees misappropriation. She said:

Ndiyabwino, chifukwa chonena zoti, ngati masiku a mbuyomu, njira imeneyi isanabwere, pamapezeka ma issues oti ndalama zasowa. [Ndipo] ana ena

amalephera kulemba mayeso chifukwa choti maina awo sanatuluke. Pamene njira iyi [e-payment] imapanga direct ku MANEB ndipo sipakhala vuto lina lirilonse (e-Payment is nice because we used to have students failing to write their examinations for non-remittance of examination fees to MANEB accordingly. But now, we pay examination fees direct to MANEB, making the money secure)

Another student from a city secondary school recalled an incident where students were forced to pay twice for examinations due to embezzlement:

At a certain private school, students were asked to pay again for examinations because their teacher [had] used the money for personal use. So the [the student] were forced to pay again.

One head teacher agreed with the student, saying the policy has indeed dealt with examination fees misappropriation.

Yeah, this is very true because previously, we could hear a lot of stories about examination fees embezzlement by teachers, the head teachers and all other people involved. It was very bad because most of the results were put on hold, were not released, and the candidates were the ones suffering from the embezzlement of examination fees. So, it was very bad.

One school examination officer applauded e-Registration, saying it has so far brought sanity in the payment of examinations fees.

We have had cases in Malawi during the time when payment was done manually through [schools to] MANEB account. Some teachers or head teachers could embezzle some funds for registration of students.

It had a negative impact on the students because by the end of the day, they [candidates] were not allowed to sit for the examinations. That could bring a psychological effect on the student himself. The whole time that he has been preparing for examinations could be taken as a waste.

A district education official added a voice, saying such issues were there, and such embezzlement resulted in some learners were not being given the opportunity to write examinations:

It really inconvenienced some learners, to the point that parents were complaining, learners were demotivated, and their future doomed because one had to start over again to enrol for the next examination. So that one was really a challenge.

It was also a challenge to those teachers that were collecting the examination fees. Some teachers have some financial challenges. So, for them to be good enough to keep that money, it was also a challenge. So, for that one, it has helped the teachers and even the learners themselves and even the office.

Another district education official further said the old system was giving more chances for some unscrupulous school administrators use the money for personal issues and fail to reimburse. The official had this to say:

You know problems arise, you know, to any individual at any time. So, one would think, “Oh! I will take this and pay back”. However, you would see that time is going without finding time or money to replace what you have used.

Therefore, this had a very negative impact on the students because the unfortunate thing was that the students were knowing [about] that very late that the monies were misappropriated. So, that was very bad. So, I feel this is helping to address this problem.

Private schools also expressed concern that despite the aggressive campaign through all available media platforms that no one should be paying examination fees through the school, some parents and guardians are still adamant. An ISAMA official had this to say:

There are some parents who are still giving the money [examination fees] to administrators, who say: “Do it for us, we don't know how to do it” and others are not “gadget friendly”, they fear technology. So, just the process of payment to them is a challenge. And you are quite aware that parents are not allowed to use mobile

money agents but they have to do it themselves. So, that brings some problems to some parents, and they trust the authority of the school to do it for them.

So, this is bringing some small pockets of embezzlement as well, because the administrators who take that money don't proceed with the payment. And they lie to the parents that we have done it without showing them.

4.4.3 Cutting Cost

Key participants from touted e-Registration as being a saviour, saying the policy also aims at saving schools— which are already struggling financially— from unnecessary costs for registration. One examinations officer agreed that indeed e-Registration is cost-effective. He said:

Well, the e-Registration is more cost effective because, let's say, during the manual registration, candidates would be asked to pay a certain amount of money that would be used by the head teachers or the teacher responsible that time to take the registration data to the DEM's office or MANEB offices. This was costly because candidates were required to pay a certain amount that would be used for transportation. Again, in addition to that, the candidates are very sure of their registered details because they are provided with a feedback [invoice] right away upon registration.

One head teacher added weight to the examinations officer's view, saying the manual registration was expensive:

I could say this [e-Registration] is cheaper and is less costly because nowadays I don't think you'll find one without a phone because you can still also use a phone. It doesn't necessarily need one to have a laptop but a smartphone of which most of people have. So this is cheaper.

And, again, if you look at the old one [manual registration], it involved a lot because you had to buy stationary this and that, and then you talk of nowadays,

you find that stationary is expensive, you talk of a ream of paper is more than 12,000. And, again, if you are doing that, then let's say there are mistakes. It means you have to tear up all those papers which are not right, then you have to look for another paper. So you can see that this is cheaper than the previous one.

A district education management official concurred with all and summarised that this cost effectiveness is not only on the schools' side but also on MANEB.

I think [with] the introduction of e-Registration, they are trying to reduce costs that were incurred in terms of travelling to MANEB to deliver the documents and MANEB doing the same, delivering the documents here at the office. Another one is to do things in due time, to save time.

4.5 Research Question Three: Access to Registration by Disadvantaged Candidates

Much as a new policy is developed to address issues in the current way of doing business, it is also possible for the policy to exclude the vulnerable in the society— among other challenges— as policies have always had losers and winners. This question was, therefore, deliberately posed to check if the development of this policy planned to take on board disadvantaged candidates especially in remote areas as below:

4.5.1 Access to Gadgets

A student from a rural community day secondary school lamented over lack of recommended devices by learners and parents; hence, feared that this could hinder successful e-registration. He suggested a solution:

A MANEB njira yomwe angatsate akuyenera kuwuzza aphunzitsi kuti kalemba asanatseke ayitanitse makolo ndi kuwafokozera monga angachitire za e-Registration (MANEB should ask teachers to call for a meeting with parents and orient them on how they can go about e-registration)

However, findings show that e-Registering does not require every student or parent to

have access to a smartphone or schools to have printers, electricity and computers. A key participant from MANEB shared:

In the past, there was this issue, manual [registration] and like, and you [would] agree with me that those in the rural areas didn't have maybe access to most of the facilities which are found in town. Let's say when it came to printing of [examinations] documents, they had to travel all the way from rural to urban places. But with this one, that issue has been addressed, because everything is done even on a phone.

So, they have been assisted because it's not something that cannot be done on a mobile phone. So many people have mobile phones and the services [e-Registration] can be done is using the mobile phone. So there is that reduction in terms of costs by those rural areas. This time they cannot travel all the way from arural school to the urban because wherever they are, they are able to do that.

One head teacher agreed that it is only schools that must have gadgets for registration and, himself, he picked a teacher with a smart phone to be registering candidates:

They called for our school to send data collectors to represent our school. Then, they taught them how to go about it. [So] we selected those with the smart phones. After that, it's those data collectors who oriented us as the heads, what they have learnt. So, we became used because those data collectors, they become familiar with that particular system just because they learnt but also as we learnt from them

One school examinations officer added that it is not a must for every school to have a computer since-Registration works even with smartphones. He wondered if a secondary school teacher would not have a smartphone to use for registration in this day and age:

Nowadays, I don't think you'll find one [a teacher] without a phone because you can still also use a phone. It doesn't necessarily need one to have a laptop but a smartphone of which most of people nowadays most of them have..

4.5.2 Access to and Reliable Internet

Access to the internet in remote areas, let alone accessing dependable internet, could be another potential challenge to the planned e-Registration; hence, an area of interest in this study.

On this, a key participant said:

That is one of the challenges but it has been solved in that [examination] centres that are in remote areas, where there is actually poor [mobile phone network, the schools simply collect data on paper and then submit that to maybe to the zone, to zEMIS officers. So these [zEMIS officers] are the ones that do capturing of data for them. So, usually these [zones] are located in areas where there is network coverage.

An ISAMA officer expressed worry over internet network issues, saying it has the potential to hamper the strides made so far in introducing e-Registration, and asked for improve network:

Sometimes the network in some other areas, hard to reach areas, is poor. If network can be improved across the country, it means we are giving a levelled playing field to everybody.

A TUM Officer said an intervention, requiring mobile phone and internet, heavily relies on the quality of network from respective service providers. As such, he feared any network challenged could thwart e-Registration gains:

When you are talking about e-Registration, some of the challenges could be the issue of network. So, perhaps, special consideration could go to those sites where we know for sure that for them to access some of these services, especially when you come to the issue of network, special consideration to accommodate those who are residing [in] those challenge areas could be ideal.

One examinations officer asked MANEB to provide internet for schools to use specifically for examinations:

The only initiative that MANEB should do is to make sure that the schools are provided with the internet so that there are no kind of delays to access the internet. Very fine that we have internet installed in most of the schools, but for schools that are possibly far from the city, that's the one that we're talking about here

According to key participants, MANEB had already entered into agreements with the service providers to make sure that they are found all over the country to allow for both mobile phone and internet services.

4.5.3 Technological Competence

Competence in technology, especially internet use, was yet another area which drew the study's attention regarding policy considerations on registration of candidates from such areas. However, document analysis shows that the registration does not require the candidate or a parent to be ICT literate. Rather, it is teachers who are supposed to know how to operate the e-Registration portal.

Key participants said, in order to bridge the possible ICT literacy gap, MANEB conducted orientations to ensure that all policy users, be it in rural or urban areas, have uniform knowledge on e-Registration operation:

We knew that in this country, not so many people are conversant with the internet, WhatsApp, this and that. So we said, "Okay, if they're not conversant, what should we do? Let's have some kind of orientation to so many people in the rural areas so that at least they should be aware of what is going on". So those were the challenges and the mitigations which were put in place.

A school examinations officer confirmed to have participated in the orientation exercise on e-Registration.

Yes, as MANEB was rolling the program, it did conduct an in-service training for the one to be conducting the registration.

A district education management official also confirmed the holding of orientation meetings on e-Registration in their district. However, there was a suggestion to have frequent orientations.

At the very beginning, we did orientations as dEMIS officers and some teachers in the schools. But the following years, those orientations were not done. So, districts or schools were just depending upon those who did [the orientation] already, maybe to train the [new] ones who have been assigned. However, there were challenges for some schools kuti mwina yemwe amapangawo wachokapo [that the one oriented on e-Registration is no longer there].

4.6 Participants' Understanding of the Policy

The study further sought policy users' understanding of the policy through the interviews. Findings indicate that people on the ground have a somewhat clear to clear understanding of the e-Registration policy.

A student from a city secondary school expressed his understanding of the policy:

This is a new process [policy] whereby MANEB has formed in primary and secondary schools so that students may not suffer when they are paying their MANEB examination fees

ISAMA, on its part, shared its understanding of the e-Registration policy:

It is a form of registration whereby we are now using the electronic platform to register the learners, in this case the candidates [for] standard eight, JCE and MSCE examinations... this time around it is like parents are involved, learners are involved and the schools are also involved. Yeah, so that's how I understand e-Registration.

A school examination officer, on the other hand, gave his understanding, saying it is the phasing out of hardcopies:

E-Registration, the way I have known it, appears that's the registration whereby the use of hardcopies now has been phased out, where there is the use of electronic [platform]. In this case, there a lot which has been removed, like we were pasting photos on some forms while this time around is just having a photo of a student and then upload it on the portal.

One head teacher understood the policy as a transition in registration for examinations from paper to phone:

My understanding about e-Registration policy is that we take leaner particulars through a phone, then we send them to the MANEB. Then MANEB, there, makes that normal registration according to their logistics there then they send us back the final details of the learners. Then, they give us invoice numbers of the learners. Then, we forward the invoice numbers to the parents of the learners for the parents to pay examination fees directly to MANEB.

Another district education management official summarised by saying this policy is a departure from the manual registration with the purpose of effective registration of candidates online:

So, this one is done at a school level where some teachers are delegated to manage [the registration]. During the registration, learners are getting the invoices and are able to pay the examination fees online, everything online with the understanding... to minimize some errors that are always there as we register candidates. So that's myunderstanding.

Participants' understanding of the policy as presented above is not far from the policy and how works as MANEB (2021) summarises the policy by saying:

[e-Registration] enables registration of prospective candidates at examination centers i.e. schools, online via the Internet. Candidate details such biodata, photo, signatures, and relevant subjects are captured and uploaded onto MANEB servers in real time.

Payment invoices, with itemized fee details, are generated and issued to each candidate for payment. Invoices bear a unique number i.e. invoice number, which is used as reference number during payment

4.7 Policy Acceptance, Perceived Usefulness and Ease of Use

The policy, being a technological innovation, could likely face ambivalent perceptions. Therefore, the study sought people's perception of the study, which could directly affect policy implementation.

One head teacher liked the policy for its usefulness and easiness to use:

This is a policy, I feel, is very, very important and is welcome, especially when it comes to registration, as I said, because it has so many advantages over disadvantages. For instance, you could see it's time saving, looking at the time we are using the past one, it involved much time because we talk of capturing of students, more especially their photos, and then time to paste them on papers and then to check if the numbers are in order.

Again, you could see that this [policy] is also reliable because the mistakes have been reduced and it's fast as well. And you could see that there is a reduction of errors being made because once you have indicated if somebody is taking eight subjects and it is correctly being captured, it will come as it is because ... whatever is being done at the school, it will come as you have indicated [garbage in garbage out].

A school examinations officer lauded e-Registration as being useful and easy to use as compared with the old manual registration. He added that the manual registration was too involving in such a way that schools were sending data for registered candidates to MANEB, and MANEB was sending back the data for verification and back to MANEB again:

When we try to relate the two: manual registration and the e-Registration, we would rather prefer the e-Registration, because one: it's fast, fast in such a way that it's easy for you to communicate with MANEB and rectify any error that has been made. Two, it's not all that involving and time consuming because once you are done with a student, you are very sure that you will not come back to that student anymore, provided you guide them [on] what is actually going to happen and what you want to achieve at the end.

Another examination officer described the policy as efficient and speedy for that matter, hence welcomed it:

Well, this new process is very efficient, I believe, because upon registering the candidates— if at all there has been some irregularities or wrong spellings— the candidates are there to make such corrections together with the registration officer. And, well, it's a very speedy process in the sense that you do the registration today together with a candidate, and the candidate is ready to do some payment even on the very same day. [This] makes it more efficient, comparing to the previous mode of registration where it could take some days for the head teacher maybe to transfer the document to the DEM or even to the MANEB offices as well. But, this time around, there is quick transfer of information right away from the school to MANEB within seconds just because of the nature of this registration.

A district education management official praised on the policy, saying it has all that were required for the efficient registration:

The speed is there; accuracy is there; everything is improving. It has really improved the accuracy and the speed itself. As regards the past, we had some errors, we had some delays, some head teachers were delaying and some were even failing to capture information in the right way. But, then, with the online registration, everything is fine, it's checked, and the money [examination fees] is [paid] there.

Another district education official also welcomed the policy, saying it had relieved the district of the pressure they used to have to help schools register candidates since the manual registration depended much on computers and printers.

As a district, I think it's good that it [e-Registration] has gone to the schools chifukwa [because] it has reduced pressure yomwe timakhala nayo kunoko [we used to have at the office]. Nthawi ya [during] registration, timakhala ndi chi pressure chachikulu kwambiri [we used to face a lot of pressure]. Whenever a learner was missed, ifeyo ndi amene timakhala [we were] answerable. But this time, such issues zapita ku sukulu [are at school level].

Yet another district official welcomed the technological innovation and thanked MANEB for coming up with this development and bringing this policy.

We know that some of us, we are those BBCs [born before computers]. But looking at what is happening, I really feel that it's a good thing and would encourage MANEB to explore more ways to go with the new technology these days. Let's use these methods [technological innovations] so that Malawi can develop in all angles.

4.8 Potential Implementation Challenges

In order to ensure a smooth implementation of the policy, findings indicate that MANEB set up a special project implementation unit to avert possible policy implementation challenges on top of learning from sister examining bodies, as a key participant from said:

Another issue was [the setting up] of the project implementation unit. How this should be done, who is supposed to do ABCD, is it the Ministry [of Education], EQUALS or whoever? Again, MANEB thought of benchmarking with other countries' sister examiningboards, those who are doing the e-Registration, so that we should not be doing what is not working elsewhere.

On potential administrative challenges during implementation, findings indicate that MANEB foresaw postings in school, which could affect examination officers who were oriented on operating electronic registration, which could be a blow to the school.

According to another key participant from, the issue was addressed:

[There are] so many transfers [postings] [in the teaching service]. Today, a head teacher or somebody who was involved in e-Registration is transferred to another school. So that again was realised. So an appeal was made to the ministry to make sure that if they are doing transfers, maybe somebody again should be oriented before that person leaves.

A school examinations officer echoed the posting worries, saying it has the potential to compromise the e-Registration and suggested frequent orientations as an additional solution:

Yes, as MANEB was rolling the program, it conducted an in-service training for the one to be conducting the registration. We could only try to request from MANEB to make sure that these have to be done almost yearly because teachers do move from one school to the other. [Because] I can be trained here, but if I move another school, then they have lost the officer who had the technical know-how on how to manage the MANEB registration portal. In so doing, we would rather ask if MANEB would continue conducting the in-service training for these registration officers time and again, at least.

4.9 Suggested Areas for Policy Improvements

Much as a policy could be as good, still there could be some room for improvements. The study therefore sought views from policy users on the ground, on areas they felt needed improvement to make the policy even better.

i) Conduct More Orientations and Awareness

One examinations officer urged MANEB to consider more orientations to examination officers on e-Registration.

The teachers are moving [posted] from one school to the other, and the one who is appointed possibly has no knowledge of that kind. So it is important that possibly MANEB can gather them through regions... or you can demarcate them into school divisions. So that you take a division, you train them, you go to another

division, and finally possibly you could also consider using the clusters. But the clusters, they are not very conducive, but regions.

While appreciating the efforts in introducing a technological intervention resulting in transition from manual to electronic registration, one school examinations officer asked for more trainings.

For somebody who does not know some of the elements of how to use a computer or a phone may miss because, for example, they also ask us to download the nominal roles, of which maybe somebody may not be aware of. So maybe if that [further training] can happen, it may be better.

One head teacher said e-Registration was just excellent but asked for more sensitisation of communities to support the cause.

The only area that has to be done, more to be done, needs to have more attention is the sensitization to the community now. Because in some other isolated areas we are hearing news of teachers still abusing the system. So, the people in the community have to be sensitized on this one, that they have to follow the right procedure, not going, paying through the teachers or anyone in the school authority.

A district education management official also suggested more awareness of the policy for better results.

I think the awareness part that maybe during the consultation, trying to reach to those people who are really the ones to be doing that kind of work. Because from the look of things, I don't think so many teachers were involved. Maybe, but I think the only way we should be doing this is let's not avoid teachers to be involved in these things. So that they'll be the ones to let the masses out there [know] the truth about this policy.

ii) Allow for Payment through Mobile Money Agents

Another area that participants suggested improvement on was the non-linkage between MANEB e-Payment and mobile money agents system.

An ISAMA official, for instance, decried this non-linkage, fearing it could lead to embezzlement as some parents and guardians are forced to pay through the school. He, therefore, suggested the linking of e-Payment with mobile money agents' system:

And you are quite aware that parents are not allowed to use mobile money agents but they have to do it themselves. So, that brings some problems to some parents, and they [instead] trust the authority of the school to do it for them. So, this is bringing some small pockets of embezzlement as well, because [some] administrators who take that money don't proceed with the payment. And they lie to the parents that "We have done it" without showing them.

iii) Recognise Head Teachers

One head teacher complained about what he perceived as the side-lining of head teachers from orientations on the policy, only to be briefed by juniors:

They called our schools to send a data collector [examination officer] to represent our school. Then, they taught them how to go about it. After that, it's those data collectors who oriented us, as the heads, what they have learnt. So, of course (laughing), we partially felt ignored as the head teachers because we didn't undergo the training. Our juniors went there but they also need our support.

iv) Provide Schools with Gadgets

An examinations officer from a rural primary school suggested provision of better smartphone or tablets to schools for capturing high quality candidate ID photos and fast internet:

For instance, the system requires that you provide clear photos and signatures, which is effectively done through a smartphone. Now, in terms of, in case of a registration office having no... good phone, that means poor quality photos will be produced. And my suggestion would be that if schools could be provided with tablets, I think that would make this process much, much effective as pictures or signatures would be taken of high quality comparing to using.

The examination officer further gave brands of the phone he felt could improve quality of photos in schools:

Let's say, [Itel] A16 phone and a more powerful phone than that one, maybe [Tecno] POP6 or [Samsung] Galaxy A53, whatever type of phone, Hisense, that would make some differences in terms of the quality of photos or the signatures. So, providing the schools with tablets, that would bring a certain form of uniformity in terms of the quality of pictures that are produced during the registration.

v) Improve Mobile Network coverage

A head teacher from a rural secondary school suggested improvements in mobile phone coverage across the country to allow for all schools to register candidates without challenges:

If there is also an improvement in the [mobile] network coverage, because that's the only way how we send the information. So, if this is poor automatically, then you find that it would be a challenge. I was looking at some other schools where they are, I found that there's a challenge of network. For them maybe to access this process, they'd have to go to where they will find a network better communication. So if there can be an improvement in all these two, I think that would be better.

vi) Create Fee for Registration Process

A head teacher from a rural primary school suggested collection of a small fee from candidates to support the e-Registration as they use personal resources:

The challenge is about funds for data management in our phones. Through e-Registration, we have no way to get a processing fee from parents. Yet, in those days, we were able to plan accordingly, including the processing fee. Meanwhile, we have no chance to get processing fee. We do everything in our phones without getting anything from the one who is writing the exam that is from the learner or MANEB.

One examination officer from a rural secondary school also suggested an introduction of a small fee to be retained at the school to take care of incidentals such as purchasing internet bundles as they sometimes use personal resources:

I think about others who are far from technology and network. They [use phones and] may run out of time of the registration or they may have trouble to find money for registration. I think it has to be cleared that schools can also collect some funds from the students to cater for those [internet] bundle bills.

For us we have to buy maybe bundles costing maybe K20,000 to finish the whole process... The school can say, “no, we can only pay you or we can give you 10,000 to make a bundle.” [And] the rest we have to cater for ourselves as teachers who are ‘taking’ the process. So, we are forced, I have to confess this, to add some amount to the amount of the examination fees... so that we can cover for those expenses.

Relatedly, one examinations officer from a rural secondary school proposed provision of allowances to examination officers from one of them:

For us, examinations officers, usually the challenge that we have is: where do we get maybe compensation? If I can say, extra, the expenses, because our schools can only pay us little to complete the assignment. They don't really understand the struggle that we have to go through. Sometimes we use our own expenses. We are at home, we have to finish the work, but the school thinks that we are just using the [internet] bundles for our own benefit.

So, I think maybe they can set aside, maybe, a fee which will remain at the school within the examination fee. That fee can cater for the expenses that the school incurs towards registering the students because, I must say every school, almost every school charges beyond the money MANEB set.

4.10 Chapter Summary

This chapter has presented findings of the study both from the participants and document analysis following the research questions. The chapter has captured participants' responses, with some quoting the participants verbatim to help the reader appreciate the responses in their undiluted form. The next chapter discusses findings in this study.

CHAPTER FIVE

DISCUSSION OF THE FINDINGS

5.1 Chapter Overview

This chapter discusses findings of this study as presented in Chapter Four. The discussion relates the findings to the literature review and theoretical framework in order to provide a thorough discussion on the subject under study. The discussion has been grouped into themes that the researcher identified in the data set from key issues, concepts and priori themes (Srivastava & Thomson, 2009; Smith & Firth, 2011). Put simply, the researcher isolated these themes for their potential to explore if, apart from following best policymaking practice, the policy also considered the Malawi context in the face of ICT interventions. The discussion has, therefore, been organised under the following themes: *Conceptualisation and Introduction of ICT in the Examination Sector*, *ICT Interventions for Improved Services* and *ICT Interventions and Access to Examinations*. Much as the issues discussed under these themes overlap, the researcher endeavoured to separate and discuss the themes as differently as possible.

5.2 The Conceptualisation and Introduction of ICT into Examination Sector

This section discusses the initial stages that MANEB took to come up with the e-Registration policy. Further, it discusses motivations for the introduction of the policy to replace the erstwhile manual registration. The study used Framework Analysis to get the desired information and produce interpretation generated from a mountain of qualitative data to decipher how the ICT intervention was conceptualised and introduced into the examination sector (Haddad & Demsky, 1995; Davis, 1989). The discussion, as based on the literature review in Chapter Two, gives the ideal policy formulation stages and

further juxtaposes this idealism with the reality of the development of the policy under study based on the findings in Chapter Four.

The presentation of this study's findings show that ICT interventions were introduced into the examination sector through controlled and standardised processes, taking on board national examinations' stakeholders through the policy development journey. This section therefore discusses this theme under *policy conceptualization* and *why e-Registration* as an ICT intervention

5.2.1 Policy Conceptualisation

“[An] Ineke bird said since men have learned to shoot without missing, he has [equally] learned to fly without perching” (Achebe, 1959). And so, was the conceptualisation of the e-Registration policy. According to the findings of this study, one of the triggers for the conceptualisation of the policy was the misappropriation of examination fees collected from students thereby preventing the same students from writing examinations (Kaude, 2017; Kumbani, 2016). Hence, the desire by MANEB to conceptualize the e-Registration policy in order to fight against persistent challenges during the registration (MANEB, 2016).

According to the findings, MANEB is first seen conceptualizing e-Registration of candidates through its Strategic Plan of 2016-2021. In this Strategic Plan, MANEB set a first goal which was *well-managed national examinations and assessment systems*. The first outcome of this goal was *improved management of national examinations*. It is from this outcome that *e-Registration and e-Payment of examination fees* is coming out as a first output (MANEB, 2016).

Presentation of findings in this study further indicate that being an educational policy, e-Registration is a public policy since it was developed in response to a problem and directed towards a particular subject (Bell & Stevenson, 2012; Reimers & McGinn, 1997; Savard & Banville UNESCO, 2013). Further presentation of the findings show that

conceptualization of the policy was done using the interactive model of policymaking (Driessen *et al.*, 2001; Hartwell, 1994) since MANEB also collaborated with other institutions during the policymaking process. Such institutions include the Ministry of Education through the EQUALS project; mobile money service providers namely Airtel and TNM as well as mobile banking service providers such as National bank, FDH Bank, FCB Bank, NBS Bank, Standard Bank (MANEB, 2021). Incremental model is also seen in the finding as MANEB did not bring a completely new policy but improved on the existing policy on registrations for examinations (McGinn, 1997).

Again it has been shown from the presentation of this study's findings that the conceptualisation followed the policy cycle, which is a series of stages consisting of *agenda setting, policy formulation, policy adoption and implementation* (Jann & Wegrich, 2017; Kingdon, 1995; Knill & Tosun, 2008).

5.2.2 Why e-Registration?

Bell and Stevenson (2006) state that conceptualisation of a policy is more like a position developed in response to a problem or issue of conflict and directed towards a particular objective. From the findings of this study, it has been presented that there was need to change the policy from manual registration to e-Registration as a solution to the problem of enormous registration queries and the burden of correcting the same.

Additionally, the findings say there was yet another manual processing of candidate photos for identity cards involving scanning, polishing up and renaming individual photos for candidate ID printing. Yet, with e-Registration, photos come in softcopies of high quality and already merged with the examination data thereby immensely reducing the workload.

Lastly is the printing and physical delivering of high volumes of documents, as presented in the findings, which was not only time consuming but also highly costly. With e-Registration, printing of examination documents has been eradicated as schools have access to such documentation online.

All this indicates that, indeed, there was an examination registration problem that had to be fixed. It further shows that the shift in the registration for examinations is ably addressing the very problems the policy intended to address, making it a right policy choice. This further shows to be a reasonable policy choice, leading to different courses of action to solve public problems as Umar & Kuye (2006) observed.

5.3 ICT Intervention and Improved Services

Amazed by the wonders of ICT, Raja and Nagasubramani (2018) equates it to a gift from God:

Technology is a gift of God. After the gift of life it is perhaps the greatest of God's gifts. It is the mother of civilizations, of arts and of sciences. Technology has certainly changed the way we live.

The authors continue touting technology, saying it has impacted on different aspects of life and reshaped the living. Undoubtedly, technology plays an important role in every circle of life since numerous manual tasks can be automated, many complex and critical processes can be carried out with ease and greater efficiency with the help of modern technology. Technology has revolutionized the field of education so much that the importance of technology in schools cannot be ignored.

Ratheeswari (2018) agrees that ICT is currently influencing every facet of human life by playing significant roles in diverse spheres, including education. Further, many people now recognize ICT as catalysts for change in working conditions, handling and exchanging information among others. Heleem *et al* (2022) add that digital technologies strive to increase production and efficiency, showing a powerful impact on the education system. They proceed to say ICT, as epitomised by the internet and interactive multimedia, is noticeably a significant focus for future education hence needs to be well integrated into the education sector.

The findings personify views of the authors as shared above, cementing that the policy under discussion was developed to improve the registration of candidates. This section,

therefore, discusses how the e-Registration— an ICT intervention— promises to be effective in addressing the challenges that informed the development of this policy. This will be done by segmenting the discussion into subthemes: *speedy yet accurate registration* and *fraud-free payments*.

5.3.1 *Speedy yet accurate registration*

E-Registration has been touted to be lessening administrative work, ensuring accurate data, lessening registration costs as well as providing real time data for planning purposes. This, therefore, allows responsible personnel concentrate on what matters most such as ensuring the e- Registration and e-payment platforms are up and running, thereby ensuring efficiency in the registration (Salisu, 2020).

The presentation of the findings of this study concurs with the observation above as it indicates that the former manual registration was not only slow but involved bulky documentation that was susceptible to errors, costly on the part of the candidate and the data was accessible at the end of the registration, making advance planning and decision making not possible.

The findings further attest that piloting of the policy already manifested efficiency during data capturing as there are various stages of verifying the captured data before completion of the processes.

All this shows that e-Registration was a desirable policy choice which is achieving the very efficiency that the policy was intended for.

5.3.2 *Fraud-free payment*

The Digital revolution has transformed the monotonous life style of people. The power of ICT, especially e-Payment, provides the convenience to make payments anywhere, anytime at one's fingertips (Khando, *et al.*, 2022; Panetta *et al.*, 2023; Vinitha & Vasantha, 2018). Fatonah *et al.*, 2018) describes e-Payment as a cash-less payment

mechanism which uses electronic media which has become an important part of electronic commerce.

The use of e-Payment methods has many benefits, as Garrouch (2022) notes, that e-Payment reduces the cash-carrying threats such as robbery and theft on top of providing utmost convenience and security. Nasr *et al.* (2020) adds that e-Payment has made people's lives easier and helped them save a lot of money and time through more exciting and convenient e-Payment at a click of a button on one's mobile phone.

Coming to the presentation of the findings for this study, it shows that indeed there was no safety for candidates' examination fees made through cash payments as this was prone to embezzlement by those handling the cash (Kaude, 2017; Kumbani, 2016). This resulted in inconveniencing the unsuspecting students since they were not allowed to sit for examinations in absence of proof of payment for examinations fees. The coming in of e-Payment, therefore, is a relief which ensures security of students' the examination fees.

This is a clear indication that the policy under discussion is indeed improving on the payment processes for betterment of the education sector and the society at large since any misappropriation of examination fees punishes innocent candidates thereby disturbing the future of leaders of tomorrow.

In a nutshell, the rolling out of e-Registration for examinations has recorded many advantages, some of them being lessening administrative workload, assuring accuracy and correct data secure and accountable payments, less costs and easy data analysis and planning. All this attests to the right policy choice of developing this policy to improve examination registration efficiency.

5.4 ICT Interventions and Access to Examinations

A policy, much as it is meant to solve a problem, could as well create a problem. The most probable problem this ICT intervention could bring about is exclusion of disadvantaged learners from accessing examinations due to their lack of internet enabled gadgets, ICT

skills and money. However, presentation of the findings has shown that e-Registration is even more convenient, inclusive and cost-serving than traditional manual registration as discussed below:

5.4.1 School-based Registration

Presentation of the findings has indicated that e-Registration does not require candidates or their parents/guardians to own any internet enabled mobile phone or a computer for registration (MANEB, 2021). Rather, it is the school— through a designated teacher— which uses either an internet enabled mobile phone or a computer to register all its candidates.

Further, students are not required to travel long distance to register at a well-resourced school with cable internet and computers. Rather, the students get registered right at their respective schools using their school’s examinations officer’s smartphone and the registration is as good as that done on a computer (MANEB, 2021). As for payments, they could pay via mobile money even on the most basic keypad-mobile phone, be it theirs or a borrowed one as payment does not require one to have special mobile money account.

This, therefore, means that no candidate, parent or guardian is required to possess an internet enabled gadget because there e-Registration is not self, rather, it is school-based. This, in a way, makes the registration convenient since there will be no hassles for the candidates or parents to have a smartphone for registration.

5.4.2 Affordable Registration

The findings show that e-Registration has proved to be cost-effective, unlike the previous registration which used to require extra fees from the candidate. This extra fee was meant to meet the expenses of the school authorities’ travel to district education to deliver registration data; to MANEB offices to deliver hardcopies of candidates ID photos and indeed to commercial bank to deposit examination fees collected from the candidates. In fact, there was also another fee for ID capturing and developing, only for the photo to be

converted back to softcopy at MANEB.

With e-Registration, however, the presented findings show that there is no more travelling as registration could be done even on a basic smartphone, hence no more extra transport costs. Again, e-Registration does not require ID photos to be developed, which is another saving from photo developing fee.

This sits well with Haddad's Conceptual Framework, which emphasises that policies should not only be desirable and feasible but also relatively affordable.

5.5 Policy Acceptance, Perceived Usefulness and Ease of Use

Developed in 1989, TAM remains the most used models for analysing the processes supporting the acceptance of technology to predict the behaviour of and provide a theoretical explanation for the successful implementation of technology (Muchran & Ahmar, 2019). According to TAM, technology acceptance is a three-stage process, whereby external factors (system design features) trigger cognitive responses (perceived ease of use and perceived usefulness), which, in turn, formal affective response (attitude toward using technology/intention), influencing use behaviour (Marikyan & Papagiannidis, 2023).

TAM has been extensively used in the fields of health, banking, mobile library and language learning, just to mention a few (Rahimi *et al.* 2018; Ammenwerth, 2019); banking Muchran & Ahmar, 2019; Rafique *et al.*, 2020), making it an effective model applied across sectors.

Coming to the current study, presentation of the findings show that participants liked the e-Registration for its perceived usefulness. The participants laud the policy, saying it is effective in addressing issues that used to haunt the manual registration, and efficient in ensuring accurate capturing of registration data.

Again, the policy's e-Payment element has won the hearts of many, applauding it for its

ability to do away with perennial embezzlement of examination fees. Above all, the findings show that the policy is easy to use as one is able to operate it only after a day's orientation or even by following its operating manual.

All this points to the fact that participants have accepted the e-Registration policy, a technological intervention. The acceptance is based the policy's perceived usefulness in eliminating anomalies that rocked the manual registration, and ease of use as one doesn't need to be tech-savvy to register a candidate. Further, it shows that developers of the policy also considered policy technology acceptance hence made it purposeful and easy to use.

5.6 E-Registration Country Comparison

Having looked at the formulation of e-Registration in Malawi, it will be necessary to compare this to other countries in Africa as presented in the literature review. Such countries as mention in the literature review are; Zambia, Uganda and Kenya.

As the following table visualises, Malawi's e-Registration is favourably comparable with other countries in also all angles.

Table 3: E-Registration Country Comparison

Country/ Feature	Registration Platform	Registration Process	Payment Platform	Pros	Cons
Malawi	Online	Schools register candidates online	Mobile Money and Mobile Banking	Efficient, speedy and secure exam fees payment	Erratic Internet
Uganda	Online	Schools register candidates online	Mobile Money and Mobile Banking	Efficient, speedy and secure exam fees payment	Erratic Internet

Kenya	Online	Schools register candidates online	Mobile Money and Mobile Banking	Efficient, speedy and secure exam fees payment	Erratic Internet
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Source: MANEB (2021), Milumbe (2016), apuc & Atibuni (2017) and Odede (2012)

5.7 Chapter Summary

This chapter has discussed findings of this study thematically. From the discussion, it has been shown that e-Registration seems to be the best policy option in addressing challenges that rocked manual registration. The more the people are sensitised on the benefits of e-Registration, especially its e-Payment element, they more they will embrace this technological intervention and eradicate completely challenges like embezzlement of examination fees.

The next chapter presents conclusion and recommendations as this was not a commissioned study.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Chapter Overview

This study aimed to analyse the formulation and configuration of the e-Registration as developed by MANEB to replace the traditional manual registration method for national examinations. This was done by examining the policy formulation's adherence to established policy-making best practices, the policy's ability to improve registration and, indeed, the policy formulation's considerations to challenges in access to smart devices and internet. This chapter, therefore, provides conclusion and recommendations.

6.2 Policy formulation's adherence to established policy-making best practices

Analysis of findings of this study reveal that the formulation of the e-Registration policy passed through various stages as expected of an educational policy. Such stages included conceptualization, problem identification and motivation for change, and stakeholder engagement among others. These are summarized as follows:

6.2.1 Problem Identification, Motivation for Change and Conceptualisation

The study found that e-Registration policy was formulated to address challenges that were identified in manual registration for examinations such as inefficiencies, embezzlement of examination fees and costly processes. These challenges acted as a motivation for change and this led to the conceptualisation of e-Registration policy.

6.2.2 Stakeholder Engagement

Having conceptualized the policy, analysis of the findings reveal that the conceptualised policy was taken to stakeholders for their appreciation and input. This is a very important stage when it comes to policymaking since failure to engage policy users results in the rejection of the policy during implementation stage. However, when stakeholders are engaged, they provide valuable input and own the policy so much that implementation becomes easier.

6.3 Policy's ability to improve registration

As literature review showed, a policy is not developed for the sake of it; rather it is formulated to address challenges that the present way of doing business faces. So is the e-Registration policy. Analysis of the findings found that e-Registration was developed to address the following challenges:

6.3.1 Efficiency and Error Free Registration

Analysis of findings indicate that e-Registration indeed improves registration efficiency in terms of speedy and almost error free registration. On the speed, the study discloses that, unlike manual registration which required submission of captured student to MANEB, e-Registration is done in real time hence no need to submit the data separately. On error free data, e-Registration gives candidates multi-layer opportunities to verify the correctness of their details on the individualized invoices and to report to their school any errors for corrections before making payment. Schools, on the other hand, now have exclusive rights to correct registration errors such as wrong names, wrong dates of birth, wrong subject choices or wrong photos before individual payments are done. All this ensures that the data is error free, just as the e-Registration policy was intended to achieve.

6.3.2 *Cost-cutting*

E-Registration has shown to cut the cost of registration for examinations. As analysis of the findings established, the cost-cutting favours not only schools but also MANEB. For schools, there is no more travelling to MANEB to submit candidate ID photos, registration data, and proofs of payment or requests for data amendments since all this is ably captured online. This saves the school from travelling costs. The analysis of the findings also shows that MANEB no longer prints nominal rolls and sends them to schools since such documents are uploaded on schools' portal for downloading. Further, MANEB no longer needs special paper for nominal roll or attendance register printing; neither does it need motor vehicles, fuel and staff and allowances to deliver such documentation, hence cutting costs indeed.

6.3.3 *Examination Fees Security*

Analysis of the findings of the study reveals that, since candidates were paying examination fees through their respective schools and the schools were remitting the fees to MANEB, there were common incidents of embezzlement of such examination fees by some school operators. This saw innocent students failing to sit for examinations due to non-payment of examination fees. However, with e-Payments— which is a component of e-Registration— candidates pay directly to MANEB using various platforms such as mobile money and mobile banking. This goes to show how the e-Registration policy has improved on examination fees security.

6.4 Policy formulation's considerations on access to smart devices and internet

On the degree of consideration given to poor access to smart devices and internet during the e-Registration policy formulation, the analysis of findings of this study establishes that indeed due attention was given to these challenges and deliberate measures were put in place to avert such challenges as shown below:

6.4.1 Access to gadgets and internet

Analysis of findings of this study shows that policy formulation took note that not every student could have a smart gadget, let alone easy access to the Internet, to register oneself for examinations. As such, the policy was formulated in such a way that registration is done by the school, through a designated examinations officer, not by the students themselves. Further, the analysis of findings indicate that, considering that not all schools could have computers, the policy formulation also deliberately made the e-Registration internet-based to allow for access to it even on a smartphone. All this averts challenges, which could have come about if registration was left to students themselves with little or no access to smartphone and internet.

6.4.2 Technological competence

Analysis of findings from the study shows that the formulation of the policy further put into consideration that any technological intervention, which proves difficult to use, creates disinterest in the user hence implementation of such a policy could flop. To avert this, the e-Registration portal interface was simplified so much that it does not require the user to be tech-savvy to register a candidate thereby making the policy easy to use and easily accepted.

6.5 Study Recommendations

The study presents few areas of concern from policy users on the ground as detailed in findings and discussion chapters, requiring attention of the authorities. The study, therefore, makes the following recommendations address the issues:

6.5.1 Hold more orientations on the policy

Some participants, as the study found, bemoaned absence of subsequent orientations of the policy. The problem is exacerbated by frequent postings in the teaching service which takes away some of the oriented teachers, leaving the school with almost no one to operate their registration portal. A key participant also admitted that this could indeed be a

potential challenge.

As a solution, the study recommends that there should be yearly orientations on e-Registration until there is saturation in capacity to operate the e-Registration portal. Those that get oriented in one year should not attend the other year's orientation. This could build capacity in the schools such that one school could have more than one teacher knowledgeable in e-Registration, thereby ensuring effective and efficient registration even in the face of frequent transfers.

6.5.2 Link e-Payment with mobile money agents' platforms

The e-Payment is possible on personal mobile money accounts only, not on mobile money agent platforms. This, according to the study's findings, drives individuals who are not familiar with mobile money processes to seek help from mobile money agents. When such agents inform them that they do not do such transactions, such individuals opt for payment through the school, thereby sustaining examination fees embezzlement.

The study, therefore, recommends that the e-Payment should be linked to the mobile money agent platforms. This could help those people who are not conversant with mobile money payment procedures to pay through such mobile money agents.

6.5.3 Aggressive marketing of the e-Payment

Analysis of the findings of study reveal that some parents and guardians are still paying examination fees through their school. As a result, there are pockets of embezzlements.

As a solution to this resistance, MANEB should employ an aggressive marketing strategy to sell the e-Payment to the masses, telling them about its importance among others. This could be done through diverse media platforms such as sponsored social media posts, paid adverts in the mainstream media, production and distribution of information, education and communication materials such as brochures, posters among others in order to saturate the public with proper information for their informed acceptance of the e-

Payment.

6.5.4 Fund School e-Registration Expenses

Findings of this study show that some of the teachers that are delegated by their schools to register candidates are not provided with gadgets for the exercise. Instead, they use their personal gadgets such as computers and smartphones. In worst cases, some use even their personal internet to register candidates because they are either given limited resources for internet access or not given at all by their school.

To address this challenge, the study recommends that schools should procure office smartphone and load enough airtime for the examinations officer to register the candidates without using own resources. Money for buying of the smartphone and the internet could be sourced from parents after making them appreciate the importance of such purchase. Alternatively, MANEB could order schools to use part of centre fees to purchase a dedicated mobile phone special for e-Registration, since introducing a levy on examinations fees could push up the examination fees to the detriment of the less privileged students.

6.6 Contribution of the Study

The first contribution of this study is knowledge. This study is an addition to the literature for both the education policy and educational technology field. As noted in literature review, there is not much literature on the introduction of ICT proper into the education sector in Malawi, let alone into the registration for national examinations in Malawi and at MANEB in particular. Hence, this will add to that collection of literature.

This study's second and last contribution is to practice. This study has chronicled the policymaker's conceptualisation of the policy, reasons for introducing the policy, planned policy implementations and policy users' voices. Grey areas that ought to be addressed have been highlighted under recommendations. Actions, such as adjusting the implementation plan to address the grey areas as suggested by policy users, could help

see a successful policy implementation.

In summary, the study contributes to the literature and practice of both educational policy and educational technology.

6.7 Areas for Further Research

This study has looked at the e-Registration policy formulation only. Much as the study looked at the pilot phase on the ground, it did not deliberately dwell on policy implementation that much since the policy has not yet matured to be ready for such an analysis. As such, there are still potential areas for further research once the policy matures as suggested in the sections that follow:

6.7.1 Exploration of the implementation of e-Registration policy in Malawi

This research could dwell on the actual exploration of the implementation of the e-Registration Policy. This could gauge the policy's performance on the ground after at least five years of implementation.

6.7.2 Pros and cons of e-Registration in Shire Highlands Education Division

This research could focus on the positives and negatives of implementing e-Registration in an education division whose districts comprise some of the most remote areas, even bordering another country where mobile and internet service coverage are problematic.

6.7.3 Investigating School Operators' Attitudes towards e-Payment for exams

This study could look at private school managers or proprietors' perception towards electronic payments of examinations fees since there have been too many stories of embezzlement of examination fees in private schools.

6.8 Learning and Reflection

Just as expected from any endeavour, this study has seen the researcher learn and reflect on learning outcomes, obstacles and solutions, and future application as briefly discussed below:

6.8.1 Learning Outcomes

The study presented the researcher with a rare opportunity to conduct an academic research at a post-graduate level. Apart from being challenging, this venture was highly educative as it enabled the researcher to interface with the best practices of research thereby expanding his skills on academic research in general and educational research in particular. Again, this study has deepened the researcher's knowledge in the subject areas of education policy and ICT in education. Above all, the researcher has learnt from this study to be patient and perseverant when things do not go as fast as planned just as this study took longer than planned due to unforeseen circumstances.

6.8.2 Obstacles and Solutions

Going back to the classroom after 14 years since graduating with the first degree was a hassle to the researcher. The fire, as required by a student, had long been displaced by cold ashes. Getting back onto online to chase assignments, examinations and research was not easy yet possible. As if this was not bad enough, there came work and family pressures, which all required the researcher's undivided attention.

This notwithstanding, with commitment and dedication to school; a wonderful supervisor, proper time management and proper prioritization of tasks at work and home, the academic journey progressed in earnest and with the stamina it deserved. In addition, the researcher completed the academic journey successfully.

6.8.3 Future Applications

Looking forward, the researcher, having been equipped with knowledge, skills and lessons learned from this study, will pursue further education *ceteris paribus* in order to continue contributing to both the academic and educational policy circles. Further, the researcher will work with his employer to use the knowledge and skills gained from this study, as that could be one of the ways of moving from theory to practice.

Overall, this study was very educative as it presented the researcher with learning outcomes, challenges and solution as well as hope to future researchers. Future researchers in a similar fields could borrow a leaf from the commitment, dedication, perseverance, time management and prioritization of tasks and succeed in their research.

6.9 Summary of the Chapter and the Study

To sum up, this study has fulfilled its aims and prospects by addressing all research questions and confirming that indeed the formulation of the e-Registration policy was not random but thorough, having checked in almost all the boxes of policymaking best-practices. Again, the study shows that the policy was indeed formulated to address prevailing challenges as shown above. Further, the findings of this study reveal that e-Registration has very high prospects of achieving a 100 percent error-free registrations if the policy holders heed the recommendations put forward and act on them accordingly.

This study could be of great importance to all policymakers and decision makers to develop policies that indeed provide solutions to contemporary challenges. Further, they should also consider the Malawi context when planning policy implementation; especially for technological interventions in order to have a successful policy implementation.

REFERENCES

- Agbo, I. S. (2015). Factors influencing the use of information and communication technology (ICT) in teaching and learning computer studies in Ohaukwu local government area of Ebonyi state-Nigeria. *Journal of Education and Practice*, 6(7), 71-86.
- Ajahssie, D. (2019). *Designing of an Automated Examinations Student Registration Using Cloud Model* (Doctoral Dissertation). Cavendish University].
- Akbar, S., & Qureshi, A. Q. (2015). Role of information and communication technology (ICT) in a good examination system. *American Journal of Educational Research*, 3(11), 1438- 1443.
- Arifin, S. R. M. (2018). Ethical considerations in qualitative study. *International Journal of Care Scholars*, 1(2), 30-33.
- Bell, L., & Stevenson, H. (2006). *Education policy: Process, themes and impact*. Routledge.
- Birkland, T. A. (2017). Agenda Setting in Public Policy. In F. Fischer, G.J., Miller and M. S. Sidney (Eds.), *Handbook of Public Policy Analysis – Theory, Politics, and Methods* (pp. 63-78). CRC Press.
- Bolaji, S. D., Gray, J. R., & Campbell-Evans, G. (2015). Why do policies fail in Nigeria? *Journal of Education & Social Policy*, 2(5), 57-66.
- Brinkerhoff, D. W., & Crosby, B. (2002). *Managing policy reform: Concepts and tools for decision-makers in developing and transitioning countries*. Kumarian Press.
- Bryan, A. (2016) *Social Research Methods* (5th ed.). Oxford University Press
- Capuc, F. O., & Atibuni, D. Z. (2017). *Impact of e-Registration on the Quality of Assessment Resources in Uganda*. <https://doi.org/10.60682/t9tm-cw27>
- Chakwera, E., Khembo, D., & Sireci, S. G. (2004). High-Stakes Testing in the Warm Heart of Africa: The Challenges and Successes of the Malawi National Examinations Board. *Education Policy Analysis Archives*, 12(29), 89-97.
- Chalila, V. M., & Nkhoma, M. (2003). Ensuring effectiveness of assessment and certification in achieving educational, social and economic goals: The case of the Malawi National Examinations Board. *(IJACSA) International Journal of Advanced Computer Science and Applications*, 8(9), 294-305

- Chikazinga, W. W. A (2017). Retrospective Analysis of the Formulation and Implementation of the Primary School Repetition Policy in Malawi. *International Journal of Social Science and Humanities Research*, 5(3), 56-67
- CIPESA (2021). *Analysis of the Malawi Draft Data Protection Bill, 2021*. <https://www.africaportal.org/publications/analysis-malawi-draft-data-protection-bill-2021/>
- Cobb, P., & Jackson, K. (2012). Analyzing educational policies: A learning design perspective. *Journal of the Learning Sciences*, 21(4), 487-521.
- Cooper, A. (2014). The use of online strategies and social media for research dissemination in education. *Education Policy Analysis Archives/Archivos Analíticos de Políticas Educativas*, 22(1), 1-24.
- Cope, D. G. (2014) Methods and meanings: Credibility and trustworthiness of qualitative research. *Oncology Nursing Forum*, 41(1), 89-91.
- Creswell, J. (2003) *Research Design: Qualitative, quantitative and mixed method approaches* (2nd ed.). SAGE Publications.
- Creswell, J. W., & Clark, V. L. P. (2004). *Principles of qualitative research: Designing a qualitative study*. University of Nebraska
- Davis, F. D. (1989). *User acceptance of information systems: the technology acceptance model* (TAM). <https://hdl.handle.net/2027.42/35547>
- De Oliveira, L. F., & Júnior, C. D. D. S. (2016). The two sides of the innovation coin. In *22nd Americas Conference on Information Systems (AMCIS 2016): Surfing the IT Innovation* (pp. 1-19).
- Dolowitz, D. P., & Marsh, D. (2000). Learning from abroad: The role of policy transfer in contemporary policymaking. *Governance*, 13(1), 5-23.
- Driessen, P. P., Glasbergen, P., & Verdaas, C. (2001). Interactive policy-making—a model of management for public works. *European Journal of Operational Research*, 128(2), 322-337.
- Dye R. T. (1998) *Understanding Public Policy*. 9th edition. New Jersey: Prentice Hall.
- Eisenhardt, K. M. & Graebner, M. E. (2007). Theory building from cases: opportunities and challenges. *Academy of Management Journal*, 50(1), 25–32

- Ethicist, P. (2015). Simplifying the complexity of confidentiality in research. *Journal of Empirical Research on Human Research Ethics*, 10(1), 100-102.
- Flewitt, R. (2005). Conducting research with young children: Some ethical considerations. *Early child development and care*, 175(6), 553-565.
- Folkman, S. (2000). *Privacy and confidentiality*. American Psychological Association
- Fossey, E., Harvey, C., McDermott, F., & Davidson, L. (2002). Understanding and evaluating qualitative research. *Australian & New Zealand Journal of Psychiatry*, 36(6), 717-732.
- Fu, J. (2013). Complexity of ICT in education: A critical literature review and its implications. *International Journal of education and Development using ICT*, 9(1), 112-125.
- Gale, N. K., Heath, G., Cameron, E., Rashid, S., & Redwood, S. (2013). Using the framework method for the analysis of qualitative data in multi-disciplinary health research. *BMC medical research methodology*, 13(1), 1-8.
- Gibbs, A. (1997). Focus groups. *Social Research Update*, 19(8), 1-8.
- Gilson, L. (2014). Qualitative research synthesis for health policy analysis: what does it entail and what does it offer? *Health Policy and Planning*, 29(suppl_3), iii1-iii5.
- Goldkuhl, G. (2004). Meanings of pragmatism: Ways to conduct information systems research. *Action in Language, Organisations and Information Systems*, 4(5), 13-26.
- Gondwe, F. (2020). ICT Integration into Teacher Education: Teacher Educators' Experiences of Policy at Two Teacher Education Institutions in Malawi. *Journal of International Development Studies*, 29(1), 117-128.
- Gong, R. (2020). Digital Inclusion: Assessing Meaningful Internet Connectivity in Malaysia. *Khazanah Research Institute Discussion Paper 11/20*
- Grix, J. (2004). *The Foundations of Research*. Palgrave Macmillan.
- Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field methods*, 18(1), 59-82.

- Gustafsson, J. (2017). *Single case studies vs. multiple case studies: A comparative study*. <https://www.diva-portal.org/smash/get/diva2:1064378/FULLTEXT01.pdf>.%5Baccessed
- Hackett, A., & Strickland, K. (2018). Using the framework approach to analyse qualitative data: a worked example. *Nurse Researcher*, 26(2), 78-86.
- Haddad, W. D., & Demsky, T. (1995). *Education Policy-Planning Process: An Applied Framework. Fundamentals of Educational Planning 51*. UNESCO
- Halcomb, E. J., & Davidson, P. M. (2006). Is verbatim transcription of interview data always necessary? *Applied Nursing Research*, 19(1), 38-42.
- Hartwell, A. (1994). Education policy in Anglophone Africa: The work of education Commissions. In D. R. Evans (Ed), *Education Policy Formation in Africa: A Comparative Study of Five Countries* (pp. 123-38). USAID.
- Hayes, M. (2017). Incrementalism and public policy-making. In *Oxford Research Encyclopedia of Politics*. <https://doi.org/10.1093/acrefore/9780190228637.013.133>
- Heale, R., & Twycross, A. (2018). What is a case study?. *Evidence-based nursing*, 21(1), 7-8.
- Hernes, G. (2002). *Emerging Trends in ICT and Challenges to Educational Planning, Technologies for Education: Potentials, Parameters, and Prospects*. UNESCO.
- Hill, M. (1997). *The Policy Process in the Modern State*, 3rd Edition, Prentice Hall / Harvester Wheatsheaf, Hemel Hempstead Hertfordshire.
- Howlett, M., & Ramesh M., (2003). *Studying Public Policy: Policy Cycles and Policy Subsystems* (2nd ed.). Oxford University Press
- Igunza, E (2015). *Malawi's expensive mobile phone habit*. <https://www.bbc.com/news/world-africa-31533397>
- Jann, W., & Wegrich, K. (2017). Theories of the policy cycle. In *Handbook of public policy analysis* (pp. 69-88). Routledge.
- Jhurree, V. (2005). Technology integration in education in developing countries: Guidelines to policy makers. *International Education Journal*, 6(4), 467-483.

- Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational researcher*, 33(7), 14-26.
- Junjie, M., & Yingxin, M. (2022). The Discussions of Positivism and Interpretivism. *Online Submission*, 4(1), 10-14.
- Kadzamira, E. & Rose, P. (2003). Can free primary education meet the needs of the poor?: evidence from Malawi. *International Journal of Educational Development*, 23(5), 501-516.
- Kainja, J. (2019). *Digital rights: How expensive is the Internet in Malawi?* <https://malawi.misa.org/2019/02/23/digital-rights-how-expensive-is-the-Internet-in-malawi/>
- Kallio, H., Pietilä, A. M., Johnson, M., & Kangasniemi, M. (2016). Systematic methodological review: developing a framework for a qualitative semi-structured interview guide. *Journal of advanced nursing*, 72(12), 2954-2965.
- Karipidis, N., & Prentzas, J. (2016). A survey of factors affecting the successful integration of ICT in education. In *Proceedings of the 10th International Technology, Education and Development Conference* (pp. 8456-8466).
- Kayira, M.B.W (2008). Stakeholder participation in secondary school management in a democratic Malawi: the case of selected secondary schools in the south east education. Unpublished MA Thesis, University of Malawi, Chancellor College.
- Khatri, K. K. (2020). Research paradigm: A philosophy of educational research. *International Journal of English Literature and Social Sciences*, 5(5), 1435-1440.
- Kiernan, M. D., & Hill, M. (2018). Framework analysis: a whole paradigm approach. *Qualitative Research Journal*, 18(3), 248-261. <https://doi.org/10.1108/QRJ-D-17-00008>.
- Knill & Tosun (2008). *Policymaking*. Oxford Univ. Press

- Kowal, S., & O'Connell, D. C. (2014). *Transcription as a crucial step of data analysis*. The SAGE handbook of qualitative data analysis. <https://doi.org/10.4135/9781446282243.n5>
- Kozma, R. B. (2003). *Technology, innovation, and educational change: a global perspective: a report of the second information technology in education study: module 2*. International Association for The Evaluation of Educational Achievement (IEA).
- Kuhn, T. S. (2015). *The structure of Scientific Revolutions*. The University of Chicago Press.
- Kunyenje, G., & Chigona, W. (2019). External Actors in the Formulation of a National Information and Communication Technology Policy in Developing Countries such as Malawi. *African Journal of Information Systems*, 11(1), 43-48.
- Lincoln, Y.S., & Guba, E.G. (1985). *Naturalistic inquiry*. Sage.
- MacJessie-Mbewe, S. L. (2004). *Analysis of a complex* policy domain: Access to secondary education in Malawi*. University of Massachusetts Amherst.
- MACRA (2022). Malawi to review the National ICT policy and Digital Broadcasting policy. <https://macra.mw/news/malawi-to-review-the-national-ict-policy-and-digital-broadcasting-policy/>
- MACRA (2022). About us. <https://macra.mw/cert/about-us>
- Malawi Government (2006). *Malawi National ICT for Development (ICT4D) Policy*. https://www.npc.mw/wp-content/uploads/2020/07/national_ict.pdf
- Malawi Government (2013). *National ICT Policy*. <https://macra.mw/?wpdmpo=malawi-ict-policy-2013>
- Malawi Government (2016). *The Electronic Transactions and Cyber Security Act*. <http://www.reforms.gov.mw/psrmu/sites/default/files/E-Transactionspercent20Actpercent202016.pdf>
- Malawi Government (2020). *National Education Sector Investment Plan*. <https://www.unicef.org/malawi/reports/national-education-sector-investment-plan>

- Malawi Government (2024). *Data Protection Act*.
<https://www.malawi.gov.mw/index.php/resources/publications/acts?download=153:data-protection-act-2024>
- Malterud, K., Siersma, V. D., & Guassora, A. D. (2016). Sample size in qualitative interview studies: guided by information power. *Qualitative health research*, 26(13), 1753-1760.
- MANEB (2016). *Strategic plan 2016-2021*. Author.
- MANEB (2019). *Spreadsheet registration template*. Author
- MANEB (2021). *Procedures for Operating the e-Registration System (A Training Manual)*. Author
- MANEB (2022). *E-Registration and E-Payment: Plans and Implementation progress*. Author.
- Nampota, D. (2022). *Background to E-Registration & E-Payment*. MANEB
- Marikyan, D. & Papagiannidis, S. (2022). *Technology Acceptance Model: A review*.
<https://open.ncl.ac.uk/theory-library/technology-acceptance-model.pdf>
- Marín-González, E., Malmusi, D., Camprubí, L., & Borrell, C. (2017). The role of dissemination as a fundamental part of a research project: lessons learned from SOPHIE. *International Journal of Health Services*, 47(2), 258-276.
- Marshall, B., Cardon, P., Poddar, A., & Fontenot, R. (2013). Does sample size matter in qualitative research?: A review of qualitative interviews in IS research. *Journal of Computer Information Systems*, 54(1), 11-22.
- Mays, N., & Pope, C. (1995). Rigour and qualitative research. *BMJ*, 311(6997), 109-12.
- McCarthy, N. (2019, March 5). The cost of mobile internet around the world [Infographic]. *Forbes Magazine*, pp. 25-8
- Meyer, C. B. (2001). A case in case study methodology. *Field Methods*, 13(4), 329-352.
- Milumbe, B. (2016). *Automation of the candidate registration for school examinations in Zambia using the cloud model* (Doctoral dissertation, University of Zambia).

- Mingaine, L. (2013). Skill challenges in adoption and use of ICT in public secondary schools, Kenya. *International Journal of Social Sciences and Education*, 4(1), 224-238. <https://doi.org/10.5539/jel.v2n1p32>
- Morgan, D. L., & Hoffman, K. (2018). A system for coding the interaction in focus groups and dyadic interviews. *The Qualitative Report*, 23(3), 519-531.
- Msiska, F. G. W., Chimpololo, A., Liwambano, P. N., Maere, C., Mbendera, A., Phiri, D. D., ... & Yambeni, A. M. (2013). *Audit study to determine the effectiveness of open, distance and e-learning delivery mode in broadening and increasing access to education and training in Malawi*. Commonwealth of Learning.
- Mtemang'ombe, F. A. (2017). *An analysis of processes and contexts for ICT interventions in Malawian primary school education system* (Doctoral Thesis) University of Strathclyde.
- Mwendwa, N. K. (2017). Availability of resource materials and facilities for ICT integration in the public Primary School Curriculum in Kitui County, Kenya. *Saudi Journal of Humanities and Social Sciences*, 2(4), 362-368.
- Mwije, S. (2013). The policy cycle notion. *The Policy Cycle, Its Usefulness, and Criticisms*.
https://www.academia.edu/17832158/The_Policy_Cycle_Notion_The_Policy_Cycle_Its_Usefulness_and_Criticisms
- National Statistical Office (2019). *National Household Survey on Access and Usage of ICT Services in Malawi*.
http://www.nsomalawi.mw/images/stories/data_on_line/economics/ICT/ICT%20Household%20Survey%202019.pdf
- National Statistical Office (2023). *National Survey on Access and Use of Information and Communication Technologies by Households and Individuals in Malawi*. <https://macra.mw/download/16/research/252409/national-ict-survey-2023-2.pdf>
- Natow, R. S. (2020). The use of triangulation in qualitative studies employing elite interviews. *Qualitative Research*, 20(2), 160-173.
- Ngulube, P. (2015). Qualitative data analysis and interpretation: systematic search for meaning. In E. R., Mathipa, & M. T. Gumbo (Eds.), *Addressing Research*

Challenges: Making Headway for Developing Researchers (pp. 131-156). Mosala-MASEDI Publishers & Booksellers.

- Nili, A., Tate, M., & Johnstone, D. (2017). A framework and approach for analysis of focus group data in information systems research. *Communications of the Association for Information Systems*, 40(1), 11-9.
- Odede, J. F. (2012). *E-Registration system implementation among secondary schools in Kenya* (Master's dissertation). University of Nairobi
- Oyeromi, S. O., Folajogun, O. A., & Kareem, T. S. (2014). Educational Policy Formulation and Analysis: Challenges and Coping Strategies. *Benin Journal of Educational Studies*, 23(1&2), 34-45.
- Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data generation and analysis in mixed method implementation research. *Administration and Policy in Mental Health and Mental Health Services Research*, 42(1), 533-544.
- Pelgrum, W. J., & Law, N. W. Y. (2003). *ICT in education around the world: Trends, problems and prospects*. UNESCO: International Institute for Educational Planning.
- Poni, M. (2014). Research paradigms in education. *Journal of Educational and Social Research*, 4(1), 407.
- Powell, R. A., & Single, H. M. (1996). Focus groups. *International journal for quality in health care*, 8(5), 499-504.
- Psacharopoulos, G. (1990). *Why Educational Policies Can Fail: An Overview of Selected African Experiences*. World Bank Discussion Papers 82. Africa Technical Department Series. World Bank.
- Rehman, A. A., & Alharthi, K. (2016). An introduction to research paradigms. *International Journal of Educational Investigations*, 3(8), 51-59.
- Reimers, F. & McGinn, N. (1997). *Informed dialogue: Using research to shape education policy around the world*. Praeger.
- Ridder, H. G. (2017). The theory contribution of case study research designs. *Business Research*, 10(1), 281-305.

- Ritchie, J. & Spencer, L. 1994. Qualitative data analysis for applied policy research. In A. Bryman and R. G. Burgess (Eds.), *Analyzing qualitative data* (pp.173-194). Routledge
- Saka, T. W. (2021). *Digitalization in teaching and education in Malawi*.
http://ilo.org/wcmsp5/groups/public/---ed_dialogue/sector/_783666.pdf
- Sangala, T (2016). *ICT and related network challenges*. <https://times.mw/ict-and-related-network-challenges/>
- Saunders, M. N., & Townsend, K. (2018). *Choosing participants*. The Sage handbook of qualitative business and management research methods
- Savard, J. F., & Banville, R. (2012). Policy cycles. In L. Côté and J.F. Savard (Eds.), *Encyclopedic Dictionary of Public Administration* [online].
https://dictionnaire.enap.ca/dictionnaire/docs/definitions/definitions_anglais/policy_cycles.pdf
- Schouwstra, M. C. & Ellman, M. J. (2006). A new explanatory model for policy analysis & evaluation. *Tinbergen Institute Discussion Paper No.2006-063/2*
- Seawright, J., & Gerring, J. (2008). Case selection techniques in case study research: A menu of qualitative and quantitative options. *Political Research Quarterly*, 61(2), 294-308.
- Smith, J., & Firth, J. (2011). Qualitative data analysis: the framework approach. *Nurse Researcher*, 18(2), 55-63.
- Srivastava, A. & Thomson, S. (2009). Framework Analysis: A Qualitative Methodology for Applied Policy Research. 4 *Journal of Administration and Governance*, 72 (2009). <https://ssrn.com/abstract=2760705>
- Stahl, N. A., & King, J. R. (2020). Expanding approaches for research: Understanding and using trustworthiness in qualitative research. *Journal of Developmental Education*, 44(1), 26-28.
- Stake, R.E. (2005). Qualitative case studies. In N.K. Denzin, and Y.S. Lincoln (Eds.), *The SAGE handbook of qualitative research* (3rd ed., pp. 443-66). Sage Publications
- Stuckey, H. L. (2014). The first step in data analysis: Transcribing and managing qualitative research data. *Journal of Social Health and Diabetes*, 2(1), 6-8.

- Thurmond, V. A. (2001). The point of triangulation. *Journal of Nursing scholarship*, 33(3), 253-258.
- Triangulation, D. S. (2014). The use of triangulation in qualitative research. *Oncol Nurs Forum*, 41(5), 545-7.
- Tuli, F. (2010). The basis of distinction between qualitative and quantitative research in social science: Reflection on ontological, epistemological and methodological perspectives. *Ethiopian Journal of Education and Sciences*, 6(1), 89-94.
- Umar, K., & Kuye, J. O. (2006). *Rationalism and the problematique in policymaking and analysis: The case of public policy targeting in Africa*. <http://hdl.handle.net/2263/3955>
- UNESCO. (2013). UNESCO Handbook on Education Policy Analysis and Programming. *Education Policy Analysis*, 1(2), 23-6.
- Varpio, L., Paradis, E., Uijtdehaage, S., & Young, M. (2020). The distinctions between theory, theoretical framework, and conceptual framework. *Academic Medicine*, 95(7), 989-994.
- Villa Alvarez, D. P., Auricchio, V., & Mortati, M. (2022). Mapping design activities and methods of public sector innovation units through the policy cycle model. *Policy Sciences*, 55(1), 89-136.
- Wiles, R., Crow, G., Heath, S., & Charles, V. (2008). The management of confidentiality and anonymity in social research. *International Journal of Social Research Methodology*, 11(5), 417-428.
- Wilson, V. (2012). Research methods: interviews. *Evidence Based Library and Information Practice*, 7(2), 96-98.
- Winiko, S. M. (2018). *Monitoring and Evaluation Processes, Project Management Maturity and Performance of Digital Education Technology Project in Malawi* (Doctoral dissertation). University of Nairobi.
- WOLF, J., Lang, G., Bekett Mount, L.L. & VanBelle-Prouty, D. (1999). Where Policy Hits the Ground. *Policy implementation processes in Malawi and Namibia. US-AID*.

APPENDICES

Appendix 1A: Participants Information Sheet



Participants Information Sheet

Topic of the study

Moving with the Times? Analysis of the Malawi National Examinations Board e-Registration Policy Formulation

Introduction

You are invited to take part in a study on the e-Registration Policy for national examinations that the Malawi National Examinations Board (MANEB) administers in Malawi. This research is being carried out by Simeon Maganga, a master's student at the School of Education of the University of Malawi under the supervision of Dr. Frank Mtemang'ombe of the School of Education at the University of Malawi.

Your contribution to the study will help in understanding more about how the e-Registration Policy conceptualised and formulated. Before you decide whether or not to take part, it is important for you to understand what participation in the study will involve for you. You may take time to read the following information carefully.

What is the purpose of this investigation?

This study aims to examine how MANEB formulated and configured the e-Registration to effectively replace the traditional manual registration method for national examinations. The study will, therefore, examine whether MANEB indeed followed best practices for policy formulation since this directly impacts on policy success or failure during implementation.

Do you have to take part?

Taking part is voluntary. You may decide whether or not you want to take part. If you don't want to take part, you do not have to give a reason and no pressure will be exerted on you to try and change your mind. If you do decide to take part, you are still free to withdraw at any time, up to the point of completion, without having to give a reason and without any consequences. If you exercise your right to withdraw and you do not want your data to be used, any data which have been collected from you will be securely destroyed.

What will you do in the project?

If you agree to participate, I will ask you to quickly go through an e-registration training manual and thereafter have an interview discussion with you. There are no right or wrong answers—I just want to learn about your opinions. The interview will not take more than an hour.



What happens next?

Although I will be taking some notes during the interview, I will not possibly write fast enough to write down every part of the interview, so I will ask to audio-record the discussion so that I do not miss anything that you may share during the interview. However, you have a right to decline to be recorded and I shall only write notes during the interview.

Why have you been invited to take part?

You have been invited to take part in this study because of the active role your office played in the formulation of the e-registration policy development. As such, I believe that your participation in this study will help me to get rich and in-depth information as regards the new innovation.

Please note that the study will involve interviewing one examinations officers and a head teacher at your school, two form one students and two form three students who underwent e-registration in their previous examinations, and one Parent Teachers Association (PTA) representation for the school.

What are the potential risks to you in taking part?

You shall never be exposed to any situation for the purposes of this study that may cause physical or psychological discomfort or injury. You have a right not to allow any observation of behaviour/practices or respond to question that you may consider sensitive, private or you are not comfortable with.

What happens to the information in the project?

All the information you provide will be confidential and used for the purposes of this study only. The data shall be given code names (pseudo-anonymised) and kept safe from unauthorised access or accidental loss. The information will be used in a way that will not allow you to be identified. In addition the results of this research will not be able to link any information provided to you personally or your school.

Please note that the University of Malawi adheres to research ethics as enforced by the University of Malawi Research and Ethics Committee (UNIMAREC). All personal data on participants will be processed in accordance with the provisions of the UNIMAREC.

Thank you for reading this information — please ask any questions if you are unsure about what is written here.

What happens next?

If you agree to take part in this study, you will be asked to sign the Consent Form. You will be given a copy of both the Participant Information Sheet and the Consent Form to keep. If you decide not to participate, I would like to thank you for your time.

Researcher contact details:

Simeon Maganga,
Master's Student,
School of Education,
University of Malawi,



P. O. Box 280, Zomba.
Cell: +265 (0) 999 108 774/ (0) 888 526 514;
e-mail: med-ppl-11-21@unima.ac.mw or sfmaganga@gmail.com

Research Supervisor

Dr Frank Mtemang'ombe,
School of Education,
University of Malawi,
P. O. Box 280, Zomba.
E-mail: fntemangombe@unima.ac.mw

Who to contact for more information

This investigation was granted ethical approval by UNIMAREC. If you have any questions/concerns, during or after the investigation, or wish to contact an independent person to whom any questions may be directed or further information may be sought from, please contact:

Dr. Victoria Ndolo,
UNIMAREC Chairperson,
University of Malawi,
P.O. Box 280, Zomba.
Cell: +265 995 0427 60



Appendix 1b: Fomu ya Uthenga wa Kafukufuku



Fomu ya Uthenga wa Kafukufuku

Mutu wa Kafukufuku

Kuyenda ndi Nthawi? Kusanthula momwe MANEB Inapangira Ndongomeko ya Kalemba wa Mayeso Pakompyuta

Mau oyamba

Mukuitanidwa kuti mutenge nawo mbali mu kafukufuku wa kalemba wa makono yemwe bungwe lopanga komanso kulembetsa mayeso m'dziko muno la MANEB lakhazikitsa. Wotsogolera kafukufukuyi ndi bambo Simeon Maganga omwe akuchita maphunziro a ukadaulo wa zamaphunziro ku yunivesite ya Malawi motsogozedwa ndi Dr Frank Mtemang'ombe a ku yunivesite ya Malawi komweko.

Maganizo anu omwe mupereke mu kafukufukuyi athandiza kumvetsetsa za kalemba wamakono. Musaanange chisankho chotenga nawo gawo mu kafukufukuyi, ndi zofunika kuti mumvetse kutenga gawo mukafukufukuyi kukutanthauza chani ndipo pezani nthawi kuti muwerenge untenga uli m'musiwu:

Cholinga cha kafukufuku

Cholinga cha kafukufukuyi ndi kuunika momwe bunge la MANEB linapangira kalemba wa mayeso wamakono. Kotero kafukufukuyi aunikanso ngati MANEB inatsatiradi njira zokhazikika pa kabweretsedwe ka ndondomezo zatsopano pakachitidwe ka zinthu. Izi zichitika poika ana anayi pa gulu ndikumakambina za kalemba wa mayeso watsopanpoyi.

Kodi ndikuyenda kutenga gawo?

Sumukukakamizidwa kutenga gawo mu kafukufukuyi. Muli ndi ufulu ovomera kapena kukana. Ngati mwakana palibe chilango china chilichonse. Ngati mwavomera mulinso ndi ufulu osintha maganizo nthawi iliyonse, osaperekanso chifukwa, ndipo palibe chilango chilichose.

What will you do in the project?

Ngati mukuvomera kuti mutenga gawo mu kafukufukuyi tikupemphani kuti musiane fomu formu ya chilolezo. Kenako tidzakupatsani. Komanso tikambirana kudzera m'mafunso omwe muti mudzatiyanke moona mtima.

Ngakhale kuti ndizilemba zokambirana zili mkati, sizingatheke kulemba zomwe momwe zayankhulidwira. Choncho, ndikupemphanso chilolezo kuti ndidzajambule mau okha a zokambiranazi. Koma osayiwala kuti mulinso ndi ufulu ovomera kapena kukana kuti zoyankhula za mwana wanu zisajambulidwe ndipo titsatira kufuna kwanu popanda chilango.

Mwasankhidwa chifukwa ninji?



Mwasankhidwa kutenga gawo mu kafukufukuyi chifukwa cha mbali yomwe tikuyembekezera kuti mutenga popanga ndondomeko a kalemba wa mayeso. Mwaichi, tikukhulupilira kuti pamene mwatenga gawo, muthandiza kupereka maganizo anu akuya pa za kalemba wamakono.

Mukafukukuyi, ticheza ndi aphunzitsi aku pulayimalee komanso sekondale, ophunzira a formu 1 ndi formu 3 omwe analemba mayeso chaka chatha kudzera mu kalemba wa mayeso watsopano. Tichezanso ndi mabungwe a aphunzitsi, oyimira sukulu zomwe si zaboma konanso oyimira makolo.

Kodi pali chiopsezo chilichonse kwa mwana wanga?

Mukafukufukuyi, mwana wanu sakumana ndi zomwe zingapere chiopsezo pa moyo wake. Muli ndi ufulu osalola kuti mwanayu afunsidwe mafunso ena, ngati mukuona kuti simukukondwa nawo.

Kodi zoyankhulidwa mu kafukufukuyu zigwiritsiwa nchito motani?

Zomwe zomwe zikambidwe mu kafukufuku ameneyu zikhala zachinsinsi ndi zigwiritsidwa nchito mu kafukufukuyu basi. Mayankho adzapatsidwa ma nambala pofuna kusunga chinsinsi cha omwe akutenga nawo mbali. Komanso zotsatira za kafukufukuyi sidzidzaonetsa kuti wakuti ananena zakuti; kapena sukulu yakuti inanena zakuti.

Dziwani kuti yunivesite ya Malawi imatsata ndondomeko zokhazikika za zafufuku. Choncho maina a omwe atenga gawo mu kafukufukuyi adzasungidwa mwa chinsinsi potrengera zokhazikika za yunivesite.

Zikomo kwambiri powerenga. Funsani ngati muli ndi funso kapena simukumvetsa zomwe zalembedwazi,

Titani tsopano

Ngati mukuvomera kuti mwana wanu atenge nawo, tikupemphani kuti musiane fomuyi. Tikupatsani ma formu a uthenga wa kafukufukuyi komanso ya yovomereza kupanga kafukufukuyi.

Adilesi wotsolera kafukufuku

Simeon Maganga,
Ophunzira za ukadaulo wa maphunziro
Yunivesite ya Malawi
P. O. Box 280, Zomba.
Lamya ya mmanja: +265 (0) 999 108 774/ (0) 888 526 514;
E-mail: med-ppl-11-21@unima.ac.mw or sfmaganga@gmail.com

Woyang'anira wotsogolera kafukufuku

Dr. Frank Mtemang'ombe,
Yunivesite ya Malawi,
P. O. Box 280, Zomba.
E-mail: fntemangombe@unima.ac.mw



Tifunse ndani ngati pali funso?

Kafukufukuyi wavomerezedwa ndi bungwe la univesite ya Malawi lomwe limawona za kachitidwe ka kafukufuku molondola UNIMAREC). Ngati muli ndi funso kapena dandaulo ndi kafukufukuyi ndipo mukufuna kuyankhula ndi munthu wapadera mukumumve zambiri, mukhoza kulumuizana ndi awa:

Dr. Victoria Ndolo,

Wapampando wa Bungwe la UNIMAREC

Yunivesite ya Malawi,

P.O. Box 280, Zomba.

Lamya ya mmanja: 0995 0427 60



APPENDIX 2a: Informed Consent Form



INFORMED CONSENT FORM

Topic of the Study:

Moving with the Times? Analysis of the Malawi National Examinations Board e-Registration Policy Formulation

Research Purpose and Procedures: This study aims to examine how best MANEB formulated and configured the e-Registration to effectively replace the traditional manual registration method for national examinations. Participation in this study involves:

- Providing information about your knowledge of e-Registration.
- Answering questions related to the formulation of e-Registration.
- Sharing insights into how best could have the e-registration been formulated.

Risks and Discomforts of the Research Study: There are no foreseen physical risks related to participating in this study. If any, you may experience slight discomfort or inconvenience in recollecting and discussing your experiences with the e-registration methods.

Potential Benefit of the Research Study: The data gathered from this study could contribute to the enhancement of the national examination registration process, benefiting future candidates, education administrators, and the country as a whole.

Alternative Procedures: There are no alternative procedures in this study since participation only involves sharing personal experiences and opinions related to the registration methods.

Provisions for Confidentiality: Your responses in this study will be kept confidential throughout the study and in any subsequent publications. Any information shared will be anonymized, and only accessible to the research team.



Research-Related Injury: The nature of the study involves minimal risk or no risks at all. As such, there is no provision for compensation related to research-related injury.

Voluntariness in participation and the right to discontinue participation without penalty: Participation in this study is voluntary. Any refusal to participate in this study will not attract any penalty or loss of benefits to which you are otherwise entitled. You may discontinue participation at any time without penalty or loss of benefits.

Contacts for additional information: In case of questions about the research and research participants' rights, and research related injury, contact the following:

- **Principal Investigator:** Mr. Simeon Maganga, Masters' Student, University of Malawi, P.O. Box 280, Zomba. Cell: +265 999 1087 74; and
- **Chair of UNIMAREC:** Dr. Victoria Ndolo, Chairperson of University of Malawi Research Ethics Committee (UNIMAREC), P.O. Box 280, Zomba. Cell: +265 995 0427 60

Do you agree to continue with the study? ☐ YES ☐ NO

Name of the Respondent:

Age:

Male/Female

Signature:

Date:

Name of the Interviewer:

Signature:

Date:

THANK YOU



APPENDIX 2b: Fomu ya Chilolezo



FOMU YA CHILOLEZO

Mutu wa Kafukufuku

Kuyenda ndi Nthawi? Kusanthula momwe MANEB Inapangira Ndongomeko ya Kalemba wa Mayeso Pakompyuta

Cholinga ndi ndondomeko ya kafukufuku: Cholinga cha kafukufukuyi ndi kuunika momwe bungwe lolembetsa mayeso la MANEB linakonzero njira yatsopano yolembetsera maina a ophunzira mu kaundula wa mayeso pogwiritsa ntchito luso la makono. Kutenga nawo gawo mu kafukufukuyi kuyenda motere:

- Kunena zomwe mukudziwa za njira yolembetsera mayina yatsopanoyi
- Kuyankha mafunso a momwe njira yamakonoyi inapagidwira.
- Kufokoza monwe njira yamakonoyi ikanapangiwira bwino kupera momwe ilirimu

Kuopsa ndi kuopsa kwa kafukufukuyi: Palibe kuopsa kulikonse komwe kukhoza kuchitika mkati mwakafukufukuyi monga kuvulala. Kupatula kusavulala, mwina muvutikako pang'ono kukumbira za ndondomeko yatsopanoyo.

Ubwino wa kafukufukuyi: Mayankho onse omwe aperekedwe mu kafukufukuyi akhoza kuthandiza kulimbikitsa ndondomeko ya makono ya kalemba wa mayeso; kuthandiza ophunzira; kuthandiza oyendetsa maphunziro komanso kuthandiza dziko.

Ndongomeko ina: Palibe ndondomeko ina pa kafukufukuyi popeza kutnga nawo nawo kungofuna kufotokoza momwe munthu ukudziwira njira yolembetsera mayina yatsopanoyi.

Kusunga chinsinsi: Zonse zomwe mutiuze mu kafukufukuyi zidzakhala zachinsinsi ngakhalanso pamene titsindikiza m'mabuku kutsogoloku.

Kuvulala mkati mwa kafukufuku: Kafukufukuyi alibe chiopsezo chilichonse pa moyo wanu. Kotero, palibe chiopenso cha kuvulala kwina kuli konse.

Kusankha kutenga nawo gawo mu kafukufukuyi komanso ufulu osakhan kusapitliriza nawo kafukufukuyi: Muli ndi ufulu osakha kutenga nawo gawo pa kafukufukuyi. Ngati mwasankha kusatenga nawo gawo mukafukufukuyi simudzalandira chilango. Mukhoza kusiya kutenga nawo gawo mu kafukufukuyi nthawi iliyonse popanda kulandira chilango.

Omwe mungawayimbire pa za kafukufukuyi: Ngati muli ndi funso lonkhudza kafukufukuyu, mukhoza kuyimbira anthu awa:

- **Mwini wa kafukufukuyi:** Mr. Simeon Maganga, Wophunzi Ukadaulo, Univesite ya Malawi, P.O. Box 280, Zomba. Foni: +265 999 1087 74; and
- **Wapando wa UNIMAREC:** Dr. Victoria Ndolo, Wapampando wa bungwe lowona malamulo a kafukufuku ku Univesite ya Malawi, P.O. Box 280, Zomba. Foni: +265 995 0427 60

Mukuvomera kupanga nawo kafukufukuyi?

☐ INDE

☐ AYI

Dzina la woyankha:

Zaka:

Mwamuna/Mkazi

Saini:

Tsiku:

Dzina la wopanga kafukufuku

Saini

Tsiku:

APPENDIX 3a: Parental Permission For Children Participation



Title of the study

Moving with the Times? Analysis of the Malawi National Examinations Board e-Registration policy Formulation

Introduction

The purpose of this form is to provide you (as the parent of a prospective research study participant) information that may affect your decision as to whether or not to let your child participate in this research study. Read the information below and ask any questions you might have before deciding whether or not to give your permission for your child to take part. If you decide to let your child be involved in this study, this form will be used to record your permission.

Purpose of the study

This study aims to examine how MANEB formulated and configured the e-Registration to effectively replace the traditional manual registration method for national examinations. The study will, therefore, examine whether MANEB indeed followed best practices for policy formulation since this directly impacts on policy success or failure during implementation. This will be done by sourcing responses from your child in a four-member focus group discussion with other students.

Does my child have to participate?

No, your child's participation in this study is voluntary. Your child may decline to participate or may withdraw from participation at any time. Withdrawal or refusing to participate will not affect their relationship with their in anyway. You can agree to allow your child to be in the study now and change your mind later without any penalty.

What if my child does not want to participate?

In addition to your permission, your child must agree to participate in the study. If your child does not want to participate they will not be included in the study and there will be no penalty. If your child initially agrees to be in the study they can change their mind later without any penalty.

What is my child going to be asked to do?

If you allow your child to participate in this study, they will be asked to be in a focus group of four students. The child will be asked to go through an e-Registration invoice that is issued after capturing candidate's details. Then group will be general questions on how they were registered electronically, if they were allowed to verifying their details, how they paid for exam and their general perception of the e-Registration. There

are no any right or wrong answers since the researcher just wants to learn about their opinions. The focus group discussion will not take more than an hour.

Although I will be taking some notes during the interview, I will not possibly write fast enough to write down every part of the interview, so I therefore ask for permission to audio-record the discussion so that I do not miss anything discussed during the focus group session. However, you have a right to decline to be recorded and I shall only write notes during the interview.

Why has my child been invited to take part?

Your child has been invited to take part in this study because wrote last year's examination using e-Registration. As such, the researcher believes that his/her participation in this study will help provide rich and in-depth information as regards his/her experience with the new innovation.

Please note that the study will involve conducting focus group discussion with two form one students and two form three students who underwent e-Registration in their previous examinations, one examinations officer and a head teacher from the child's school, and one Parent Teachers Association (PTA) representation for the school.

What are the potential risks to my child in taking part?

Your child shall never be exposed to any situation for the purposes of this study that may cause physical or psychological discomfort or injury. You have a right not to allow any observation of behaviour/practices or respond to question that you may consider sensitive, private or you are not comfortable with.

What happens to the information in the project?

All the information you provide will be confidential and used for the purposes of this study only. The data shall be given code names (pseudo-anonymised) and kept safe from unauthorised access or accidental loss. The information will be used in a way that will not allow you to be identified. In addition the results of this research will not be able to link any information provided to you personally or your school.

Please note that the University of Malawi adheres to research ethics as enforced by the University of Malawi Research and Ethics Committee (UNIMAREC). All personal data on participants will be processed in accordance with the provisions of the UNIMAREC.

Thank you for reading this information. Please ask any questions if you are unsure about what is written here.

What happens next?

If you agree to take part in this study, you will be asked to sign the Consent Form. You will be given a copy of both the Participant Information Sheet and the Consent Form to keep. If you decide not to participate, I would like to thank you for your time.

Researcher contact details:

Simeon Maganga,
Master's Student,
School of Education,
University of Malawi,
P. O. Box 280, Zomba.
Cell: +265 (0) 999 108 774/ (0) 888 526 514;
E-mail: med-ppl-11-21@unima.ac.mw or sfmaganga@gmail.com

Research Supervisor contact details:

Dr. Frank Mtemang'ombe,
School of Education,
University of Malawi,
P. O. Box 280, Zomba.
E-mail: fntemangombe@unima.ac.mw

Who to contact for more information

This investigation was granted ethical approval by UNIMAREC. If you have any questions/concerns, during or after the investigation, or wish to contact an independent person to whom any questions may be directed or further information may be sought from, please contact:

Dr. Victoria Ndolo,
UNIMAREC Chairperson,
University of Malawi,
P.O. Box 280, Zomba
Email: vndolo@unima.ac.mw

Do you agree to have your child/ward participate in the study?

☐ YES ☐ NO

Name of the Parent/Guardian:

Age:

Male/Female

Signature:

Date:

Name of the Interviewer:

Signature:

Date:

APPENDIX 3b:Fomu ya Chilolezo cha Makolo choti mwana wawo atenge nawo gawo mu kafukufuku



Mutu wa Kafukufuku

Kuyenda ndi Nthawi? Kusanthula momwe MANEB Inapangira Ndongomeko ya Kalemba wa Mayeso Pakompyuta

Mau oyamba

Cholinga cha fomuyi ndi kukudziwitsani monga makolo a mwana yemwe akhoza kutenga nawo gawo mu kafukufuku za kafukufukuyi kuti muthe kupanga chiganizo kuloleza mwanayu kapena ayi. Chonde werengani uthenga omwe uli mmusimu ndipo ngati muli ndi funso funsani musanapange chiganizo chololeza kapena kukaniza mwana wanu kutenga gawo mu kafukufukuyi. Ngati mwalola kuti mwana wanu atenge gawo, fomuyi idzagwiriutsidwa ntchito ngati umboni wa chilolezo chanu.

Cholinga cha kafukufuku

Cholinga cha kafukufukuyi ndi kuunika momwe bunge la MANEB linapangira kalemba wa mayeso wamakono. Kotero kafukufukuyi aunikanso ngati MANEB inatsatiradi njora zokhazikika pa kabweretsedwe ka ndondomezo zatsopano pakachitidwe ka zinthu. Izi zichitika poika ana anayi pa gulu ndikumakambina za kalemba wa mayeso watsopanpoyi.

Kodi mwana wanga akukakamizika kutenga gawo mu kafukufukuyi?

Sumukukakamizika kuti mwana wanu atenge gawo mu kafukufukuyi. Ngati mwakana kuti mwana wanu asachite, palibe chilango china chilichonse. Ngati mwavomereza kuti mwana wanu achite nawo kafukufukuyi, mulinso ndi ufulu osintha maganizo nthawi iliyonse ndipo palibe chilango chilichose.

Nanga ngati mwana wanga sakufuna kafukufukuyi

Kuonjezera pa chilolezo chanu, mwanayunso ali ndi ufulu kugwirizana nazo kapena ayi. Ngati mwanayu sakufuna kutenga nawo gawo mu kafukufukuyi ngakhale inu mutavomezera, sadzayikidwa pa mndandanda opanga nawo ndipo sadzalandira chilango chilichonse. Komanso ngati mwanawu wavomera kumayambiliro a kafukufuku, alinso ndi ufulu osintha maganizo nthawi iliyonse ndipo palibe chilango kutero.

Kodi mwana wanu afunsidwa chiyani?

Mukalola kuti mwana wanu atenge nawo gawo mu kafukufukuyi, adzayikidwa mmagulu a ophunzira anayi. Mmagulumu, ophunzirawa adzaonetsedwa fomu yomwe imapangidwa mwana akalembetsa mayeso kudzera mu kalemba wa makono (invoice). Ndiye adzafunsidwa mmaguli ngati akudziwa fomu imeneyi, ngati analipira mayeso pogwiritsa ntchito fomuyi komanso maganizo awo pa kalemba wamakono.

Sipadzakhala mayankho olondola kapena osalondola. Zokambiranazi sizidzapitilira ola limodzi.

Ngakhale kuti ndizilemba zokambirana zili mkati, sizingatheke kulemba zomwe momwe zayankhulidwira. Choncho, ndikupemphanso chilolezo kuti ndidzajambule mau okha a zokambiranazi. Koma osayiwala kuti mulinso ndi ufulu ovomera kapena kukana kuti zoyankhula za mwana wanu zisajambulidwe ndipo titsatira kufuna kwanu popanda chilango.

Ndi chifukwa chiyani mwana wanu wasankhiwa?

Mwana wanu wasankhidwa kuti atenge gawo mu kafukufukuyi chifukwa ali fomu 1 kapena fomu 3 ndipo analemba mayeso mu sisatande 8 kapena formu 2 chaka chatha pogwiritsa ndondomeko ya kalemba wa makono. Mu zokambirana omwe tikhale nawo, anawa adzayikidwa m'magulu momwe adzakhale anayi: a fomu 1 awiri komanso a fomu 3 awiri. Kotero, wotsolera kafukufukuyi akukhulupilira kuti mwana wanuyu akhoza kuthandiza kupereka maganizo ozama chifukwa choti akudziwa za njira ya makono ya kalemba wa mayeso. Ena omwe asankhidwa kuti atenge gawo mu kafukufukuyi ndi aphunzitsi pasukulu ya mwanayu, woyimira bungwe la makolo ndi aphunzitsi (PTA).

Kodi pali chiopsezo chilichonse kwa mwana wanga?

Mukafukufukuyi, mwana wanu sakumana ndi zomwe zingapere chiopsezo pa moyo wake. Muli ndi ufulu osalola kuti mwanayu afunsidwe mafunso ena, ngati mukuona kuti simukukondwa nawo.

Kodi zoyankhulidwa mu kafukufukuyi zigwiritsiwa ntchito motani?

Zomwe zomwe zikambidwe mu kafukufuku ameneyu zikhala zachinsinsi ndi zigwiritsidwa ntchito mu kafukufukuyu basi. Mayankho adzapatsidwa ma nambala pofuna kusunga chinsinsi cha omwe akutenga nawo mbali. Komanso zotsatira za kafukufukuyi sidzidzaonetsa kuti wakuti ananena zakuti; kapena sukulu yakuti inanena zakuti.

Dziwani kuti ynivesite ya Malawi imatsata ndondomeko zokhazikika za zafufuku. Choncho maina a omwe atenga gawo mu kafukufukuyi adzasungidwa mwa chinsinsi potrengera zokhazikika za yunivesite.

Zikomo kwambiri powerenga. Funsani ngati muli ndi funso kapena simukumvetsa zomwe zalembedwazi,

Titani tsopano

Ngati mukuvomera kuti mwana wanu atenge nawo, tikupemphani kuti musiane fomuyi. Tikupatsani ma fomu a uthenga wa kafukufukuyi komanso ya yovomereza kupanga kafukufukuyi.

Adilesi wotsolera kafukufuku

Simeon Maganga,

Ophunzira za ukadaulo wa maphunziro

Yunivesite ya Malawi, P. O. Box 280, Zomba.
Lamya ya mmanja: +265 (0) 999 108 774/ (0) 888 526 514;
E-mail: med-ppl-11-21@unima.ac.mw or sfmaganga@gmail.com

Woyang'anira wotsogolera kafukufuku

Dr. Frank Mtemang'ombe, Yunivesite ya Malawi, P. O. Box 280, Zomba.
E-mail: fntemangombe@unima.ac.mw

Tifunse ndani ngati pali funso?

Kafukufukuyi wavomerezedwa ndi bungwe la univesite ya Malawi lomwe limawona za kachitidwe ka kafukufuku molondola UNIMAREC). Ngati muli ndi funso kapena dandaulo ndi kafukufukuyi ndipo mukufuna kuyankhula ndi munthu wapadera mukumumve zambiri, mukhoza kulumuizana ndi awa:

Dr. Victoria Ndolo,

Wapampando wa Bungwe la UNIMAREC, Yunivesite ya Malawi,
P.O. Box 280, Zomba.
Lamya ya mmanja: 0995 0427 60

Mukuvomereza kuti mwana wanu atenge nawo gawo mu kafukufukuyi?

☐ Inde ☐ Ayi

Dzina la kholo

Zaka:

Mamuma/Mkazi

Siginecha:

Tsiku:

Dzina la ofunsa mafunso:

Siginecha:

Tsiku:

Appendix 4: INTERVIEW GUIDE FOR KEY PARTICIPANTS



Introduction:

- Set the recorder (if consent to record was given).
- Start by introducing yourself and the purpose of the interview. Explain that you are conducting a policy analysis of the MANEB e-Registration policy.
- Express your appreciation for their participation and the value of their insights

1. How was the MANEB e-Registration policy conceptualized?

- Inquire about the historical background of the e-Registration policy. Who initiated the idea, and what were the driving factors behind its development?
- Ask about the key objectives and goals that were envisioned when conceptualizing the policy.
- Explore the process of policy development, including the involvement of stakeholders and the steps taken to ensure its feasibility and effectiveness

2. To what extent does the e-Registration policy improve registration efficiency and data accuracy for MANEB and participating schools?

- Ask about the impact of the e-Registration policy on the registration process for national examinations.
- Inquire about any changes or improvements in terms of efficiency, speed, and accuracy compared to the previous manual registration system.
- Discuss any foreseen challenges encountered during the implementation and how they were addressed.

3. What impact will the e-Registration policy have on the accessibility of national examinations for students, particularly those in remote or disadvantaged areas?

- Explore how the e-Registration policy will affect students' access to national examinations, especially in remote or disadvantaged areas.
- Enquire about any changes in the registration process that will facilitate participation for students who previously faced barriers.
- Discuss any measures to be taken to ensure equitable access and address potential disparities resulting from the e-Registration policy.

4. Policy Implementation and Challenges:

- Ask about the implementation process of the e-Registration policy. How was implementation planned to be adopted by participating schools?
- Enquire about any challenges or barriers to be likely faced during the implementation, such as technological constraints or resistance from stakeholders.
- Discuss the strategies employed to overcome these challenges and ensure successful implementation.

5. Monitoring and Evaluation:

- Inquire about the mechanisms in place to monitor and evaluate the e-Registration policy's effectiveness.
- Ask about the indicators that will be used to assess the policy's impact on registration efficiency, data accuracy, and accessibility.

Closing:

- Allow the interviewee to share any additional thoughts or perspectives related to the MANEB e-Registration policy.
- Express your gratitude for their time, insights, and willingness to contribute to the policy analysis.
- Offer to share the findings of the analysis with them and ask if they have any further questions or comments.

Appendix 5: INTERVIEW GUIDE FOR DEMO OFFICIALS



Preamble

- *Set the recorder (if consent to record was given).*
- *Start by introducing yourself and the purpose of the interview. Explain that you are conducting a policy analysis of the MANEB e-Registration policy hence you are soliciting views from selected participants.*
- *Express your appreciation for their participation and the value of their insights*

1. How was the MANEB e-Registration policy conceptualized?

- Ask the interviewee to provide their understanding of the policy under analysis.
- Explore their knowledge of the policy's objectives, target population, and intended outcomes.
- Explore if they were engaged or heard of any engagement during policy development.

2. To what extent does the e-Registration policy improve registration efficiency and data accuracy?

- Ask about the impact of the e-Registration policy on the registration process for national examinations.
- Inquire about any changes or improvements in terms of efficiency, speed, and accuracy compared to the previous manual registration system.
- Discuss any foreseen challenges to be encountered during the implementation and how they will be addressed.

3. What impact will the e-Registration policy have on the accessibility of national examinations for students, particularly those in remote or disadvantaged areas?

- Explore how the e-Registration policy will affect students' access to national examinations, especially in remote or disadvantaged areas.
- Enquire about any changes in the registration process that will facilitate participation for students who previously faced barriers.
- Discuss any measures to be taken to ensure equitable access and address potential disparities resulting from the e-Registration policy.

4. Policy Implementation and Challenges:

- Enquire about any challenges or barriers likely to be faced during the implementation (such as technological constraints or resistance from stakeholders).

- Discuss the strategies employed to overcome these challenges and ensure successful implementation.

Closing:

- Allow the interviewee to share any additional thoughts or ask questions
- Express your gratitude for their participation in the policy analysis interview.
- Offer to share the findings of the analysis with them

Appendix 6: FOCUS GROUP DISCUSSION GUIDE WITH STUDENTS



Facilitator: Greetings to you all. We're here to do a focus group discussion about electronic registration for national examinations. Your opinion on the electronic registration will be appreciated. I want to thank everyone for availing yourself.

Let's start with a broad question:

1. How do you understand e-Registration? Do you have any previous knowledge of it?

Facilitator: Thank you for your views. Let's proceed to the next question:

2. In your opinion, how advantageous is e-Registration over manual registration?

Facilitator: Wonderful! We can go to challenges:

3. What do you think could be challenges in using e-Registration?

Facilitator: Great. Now, here is the final question?

4. How best could the e-Registration have been formulated to address challenges in 3 above?

Facilitator: Brilliant.

Thank you all for sharing your thoughts and ideas. Your input will help shape the future of examination e-Registration in schools.

Appendix 7: NDONDOMEKO YA MAFUNSO MMAGULU



Wotsogolera: Moni nonse. Tili pano kuti tikambirane ngati gulu za kalemba wa makono wa mayeso a MANEB yemwe akugwiritsa ntchito njira zamakono, pa chingereze e-Registration. Tikuthokozeni kamba ka kupezeka kwanu ndipo maganizo omwe mupereke mu zokambiranazi adzayambikidwa.

Tiyambe motere:

1. Kodi mumamvetsa motani za kalemba wa makono wa mayeso a MANEB? Kodi munalembetsapo mu kaundula wa mayeso a MANEB pogwiritsa ntchito njirayi?

Wotsogolera: Zikomo kwambiri.

2. Kodi mukuganiza kuti njira ya makonoyi ya kalemba wa mayeso a MANEB ndi yabwino motani?

Wotsogolera: Zozangalatsa kwambiri. Tiyeni tikambirane kuyipa kwa njirayi.

3. Kodi mukuganiza kuti njira ya makonoyi ya kalemba wa mayeso a MANEB ndi yoipa motani?

Wotsogolera: Zikomo kwambiri.

4. Potengera kuyipa komwe mwanena mwambamu, koti a MANEB amayenera kutani popanga njira ya makonoyi kuti isakhale ndi mavutowa?

Wotsogolera: Zikomo

Ndithokoze nonse pogawana nafe maganizo anu mu kafukufukuyu. Maganizo anu athandiza kuti kukonza tsogolo la kalemba wa mayeso a MANEB. Zikomo

Appendix 8: MANEB APPROVAL



THE MALAWI NATIONAL EXAMINATIONS BOARD

P.O. Box 191, ZOMBA, MALAWI. TEL. (265) 01 525 277, FAX: (265) 01 525 351

e-mail: executivedirector@maneb.edu.mw

EXECUTIVE DIRECTOR

Dorothy Cynthia Nampota, BEd Malawi, MA London, PhD Bath

All communications should be addressed to:
The Executive Director

In reply please quote:

Our Ref: C/1/6/11

17th July 2023

Dear Mr Simeon Maganga,

PERMISSION TO CONDUCT RESEARCH ON E-REGISTRATION FROM AN EDUCATIONAL POLICY FORMULATION PERSPECTIVE

I acknowledge receipt of your request for permission to conduct a research on e-registration. Kindly note that permission has been granted to you to conduct the study.

Yours sincerely,

Prof Dorothy Nampota
EXECUTIVE DIRECTOR

APPENDIX 9: EDUCATION DIVISION APPROVAL

Ref: CWED/ACAD/RESEARCH/23

26th SEPTEMBER, 2023

FROM: THE EDUCATION DIVISION MANAGER, CENTRAL WEST EDUCATION DIVISION, PO BOX 98, LILONGWE.

TO: The Headteachers, Lilongwe Urban Cluster Schools
The Headteachers, Lilongwe Rural West Secondary Schools
The Chief Education Officer, Lilongwe Rural West
The Chief Education Officer, Lilongwe Urban
The DEMIS Officers.

Cc: Head of Research Ethics, University of Malawi Research Ethics Committee, PO Box 280, Zomba.

Re: PERMISSION TO COLLECT ACADEMIC RESEARCH DATA FROM SECONDARY SCHOOLS IN CENTRAL WEST EDUCATION DIVISION.

I write to introduce to you **Mr. Simeon Maganga**, a Masters student in the Department of Education Foundation Studies in his final year of study for a Masters of Education, Policy Planning and Leadership at the University Malawi.

Mr Maganga has been granted permission to collect data for his study at your school/office.

His area of study is: ***Moving with the Times: Analysis of the Malawi National Examinations Board e-Registration Policy Formulation.***

Your school/office has been sampled for the purpose of data collection from respondents to be selected by the researcher.

However, the researcher will have to seek individual consent from the participants and that normal classes shall not be disrupted.

You are therefore requested to render to the researcher all the assistance required.



J.J. Nkhata

EDUCATION DIVISION MANAGER

APPENDIX 10: UNIMAREC APPROVAL



VICE-CHANCELLOR
Prof. Samson Sajidu, BSc Mlw, MPhil Cantab, PhD Mlw

Our Ref: P.11/23/310

Your Ref.:

CHANCELLOR COLLEGE
P.O. Box 280, Zomba, Malawi

Telephone: (265) 1 526 622
Fax: (265) 1 524 031
E-mail: vc@unima.ac.mw

18th January 2023

Mr. Simeon Maganga
Education Foundations Department
University of Malawi
P.O. Box 280
Zomba.



Dear Mr. Maganga

RESEARCH ETHICS AND REGULATORY APPROVAL AND PERMIT FOR PROTOCOL NO. P.11/23/310. MOVING WITH TIMES? ANALYSIS OF THE MALAWI NATIONAL EXAMINATIONS BOARDS E-REGISTRATION POLICY FORMULATION.

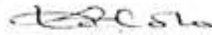
Having satisfied all the relevant ethical and regulatory requirements, I am pleased to inform you that the above-referred research protocol has officially been approved. You are now permitted to proceed with its implementation. Should there be any amendments to the approved protocol in the course of implementing it, you shall be required to seek approval of such amendments before implementation of the same.

This approval is valid for **one year** from the date of issuance of this approval. If the study goes beyond one year, an annual approval for continuation shall be required to be sought from the University of Malawi Research Ethics Committee (UNIMAREC) in a format that is available at the Secretariat.

Once the study is finalized, you are required to furnish the Committee and the Vice Chancellor with a final report of the study. The committee reserves the right to carry out a compliance inspection of this approved protocol at any time as may be deemed by it. As such, you are expected to properly maintain all study documents including consent forms.

UNIMAREC wishes you a successful implementation of your study.

Yours Sincerely,



Dr Victoria Ndolo
CHAIRPERSON OF UNIMAREC



CC: Vice Chancellor
The Registrar
Director of Finance and Investments
Head of Research
Chairperson UNIMAREC
UNIMAREC Compliance Officer

THE END