

Impact of Various Educational Inputs on Varying Academic
Performance in Secondary School: A Case Study of Mangochi
District, Malawi.

M. Ed (Policy, Planning & Leadership) Thesis

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UNIVERSITY OF MALAWI

JANUARY, 2025



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School: A Case Study of Mangochi District, Malawi.**

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Submitted to the Department of Education Foundations, School of Education, in Partial
Fulfilment of the Requirements for the Master of Education (Policy, Planning &
Leadership).

UNIVERSITY OF MALAWI

JANUARY, 2025

DECLARATION

I, declare that this study titled "Impact of Various Educational Inputs on Varying Academic Performance in Secondary Schools: A Case Study of Mangochi District, Malawi" is my original work. This research has been conducted without plagiarism and adheres to the highest standards of academic integrity. All sources of information and literature referenced have been properly acknowledged.

Full legal name

Signature

Date

CERTIFICATE OF APPROVAL

The undersigned certifies that this thesis is the result of the student's own work and effort, and it has been submitted with my full approval.

Signature_____Date_____/_____/_____

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Supervisor

DEDICATION

This study is solely dedicated to the Almighty God, who allowed Jesus Christ to die on the cross for humanity's sake.

ACKNOWLEDGEMENT

All praise and thanks are due to Allah (الله), the Almighty God, for granting me the stamina, wisdom, and grace to complete this study. I am deeply grateful for the sacrifice of Jesus Christ whose love and guidance have illuminated my academic path.

I extend my heartfelt thanks to Dr. Elias Peter Mwakilama, Associate Professor in the Department of Mathematical Sciences at the University of Malawi (UNIMA), for his exceptional supervision, critique, and constructive criticism that have been instrumental in shaping this research. Your guidance has been a beacon of light, leading me through each challenge with clarity and purpose.

My deepest appreciation also goes to my lecturers and fellow students, whose unwavering support and encouragement have been a source of inspiration. The shared journey of learning and discovery has enriched this study in ways beyond measure.

To my beloved spouse, Gladys Mbewe Kachale, and my children, including my precious daughter Balusungu Kachale, I am eternally grateful for your love, patience, and unwavering belief in me. Your moral and spiritual support has been the foundation upon which this work was built.

I wish to honor my mother, Rabeca Kaperemera, for her relentless dedication to my upbringing and education. To my late father, Axon Browings Kachale, I offer my deepest gratitude for instilling in me the values of perseverance and the importance of education. Your legacy lives on in every word of this study.

Special thanks to the SEED officers in Zomba district, Mangochi district head-teachers, teachers, and the 2023 MSCE graduates for their invaluable contributions to this research. Your participation has breathed life into this work, making it a true reflection of our collective efforts.

Finally, to all those who have played a role in this journey, I am forever indebted. Your support, whether in small acts or grand gestures, has been a blessing that I will cherish always. May Allah (الله), the Almighty God in Jesus Christ bless you abundantly, and may the Spirit of Jesus Christ (عيسى المسيح) continue to guide and protect you.

ABSTRACT

Globally, understanding the interplay between educational inputs and academic outcomes in secondary education is crucial for improving educational quality. Despite numerous studies, limited research focuses on their specific impact on student performance in Malawi. This study investigated the impact of educational inputs on student performance in the MSCE across ten schools in Mangochi District, including CDSSs, DCBSSs, NSS, and PSSs. The schools were selected using purposive and random sampling methods. A total of 252 participants, including head teachers, deputy head teachers, teachers, 2023 MSCE graduates, and education officers, were involved in the research. Descriptive statistics summarized the data, while multiple regression, linear regression, and cross-tabulation analysed the relationship between educational inputs and student performance. Key findings revealed disparities in the availability of educational resources. NSS, DCBSSs, and DCSSs generally had adequate resources, while results from CDSSs and PSSs varied. Some CDSSs had sufficient resources, while others faced gaps in infrastructure and laboratory facilities. Similarly, PSSs showed mixed outcomes, with well-resourced schools performing better, while others struggled with limited funding and materials. Financial resources, laboratory facilities, and classroom quality significantly affected student performance ($p < 0.05$). Schools with better resources tended to have higher academic outcomes. A strong positive correlation was found between educational inputs and performance ($p < 0.001$), with resources and funding playing a significant role in enhancing outcomes ($p < 0.001$). Furthermore, teacher characteristics, TLM, and infrastructure were key factors affecting performance, emphasizing the need for support in under-resourced areas. To improve educational performance, the study recommends increasing financial support, enhancing resource allocation, and investing in infrastructure. It also suggests regular professional development for teachers, stronger community involvement, and targeted support for disadvantaged schools. Ongoing evaluation, policy reforms, and further research are essential for enhancing outcomes and equity in Malawi.

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LIST OF ABBREVIATIONS AND ACRONYMS

AFDB	African Development Bank
DCSS	Day Conventional Secondary School
DCBSS	District Conventional Boarding Secondary school
EFA	Education for All
EMIS	Education Management Information System
ESIP	Education Sector Implementation Plan
FGDs	Focus Group Discussions
HCT	Human Capital Theory
IDIs	In-Depth Interviews
MANEB	Malawi National Examinations Board
MDGs	Millennium Development Goals
MoEST	Ministry of Education, Science and Technology
MoE	Ministry of Education
MSCE	Malawi School Certificate of Education
KIIs	Key Informant Interviews
NESP	National Education Sector Plan
NSS	National Secondary School
ORT	Other Related Transaction
PSS	Private Secondary School
PSLCE	Primary School Leaving Certificate Education

PSTC	Primary School Teaching Certificate
PTR	Pupil Teacher Ratio
SEED	South Eastern Education Division
SDA	Seventh Day Adventist
SDF	Student Development Fund
SFP	School Financing Policy
SFP	School Financing Policy
STR	Student Teacher Ratio
TLM	Teaching and Learning Materials
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNIMAREC	University of Malawi Research Ethics Committee
WFP	World Food Programme
WB	World Bank

CHAPTER ONE

INTRODUCTION

1.1 Introduction

This chapter provides the background to this study which includes; statement of the problem, objectives, research questions and justification of the study.

1.2 Background to the study

Globally, the realm of secondary education confronts a myriad of challenges that significantly impact students' performance (Waheed et al, 2020). These inequities often manifest in differences in resources, teacher quality, and infrastructure, resulting in disparities in learning outcomes. In resource-limited countries, such as Malawi, marginalized communities often struggle with insufficient access to educational materials, qualified teachers, and adequate facilities, which negatively affect academic success (UNESCO, 2021). Socio-economic factors further exacerbate these challenges, with students from developing nations experiencing different barriers compared to those from more developed countries (MasterCard Foundation, 2018). This highlights the need for context-specific solutions to ensure quality, equitable, and inclusive education.

A critical aspect of secondary education is understanding the relationship between educational inputs and academic outcomes. Various factors, including teacher characteristics, school facilities, curriculum design, teaching resources, and external influences, significantly impact student performance (MasterCard Foundation, 2018; Kafumbu, 2020; UNESCO, 2021). Research has consistently highlighted notable disparities in the academic performance of students attending Community Day Secondary Schools (CDSSs) compared to those in other secondary school types, such as Conventional Secondary Schools (CSSs), which include both Day Conventional

Secondary Schools (DCSSs) and District Conventional Boarding Secondary Schools (DCBSSs), National Secondary Schools (NSSs), and Private Secondary Schools (PSSs). Studies by Chiwaya (2020), Chimombo et al. (2014), Kafumbu (2020), and the Ministry of Education (2022) reveal that CDSSs consistently lag behind other school types in terms of academic performance. However, addressing the performance disparities across all types of secondary schools, not just CDSSs, is essential for ensuring equitable and improved academic outcomes nationwide.

In addressing disparities in educational performance across different secondary school types, it is essential to understand the institutional context within which these disparities arise. Governance structures, administrative policies, and resource allocation mechanisms significantly influence the variation in academic outcomes (Wambui, 2019). Schools are shaped by their governance frameworks, which include leadership roles, decision-making processes, and systems of accountability (Chiwaya, Nyamulani, & Winiko, 2022). Strong leadership, characterized by vision and effective management, is often associated with higher performance levels, as these institutions are better equipped to implement policies that meet the needs of both students and staff (Gondwe, Chiwaya, Nyamulani, & Winiko, 2022). On the other hand, schools that lack strong governance structures may struggle to respond to challenges, resulting in suboptimal academic performance (Maluma & Banja, 2019).

According to Mulera et al. (2017), key inputs essential for enhancing student outcomes include teacher characteristics, curriculum design, instructional materials, and the learning environment, which are all considered endogenous factors. Teacher quality is one of the most critical factors influencing student achievement, as highly qualified, experienced, and motivated teachers have a profound impact on student learning, fostering both academic success and personal growth (Chimombo et al., 2014). In addition to teacher quality, a well-structured and relevant curriculum ensures that students are exposed to content that matches their developmental needs and academic potential (Kafumbu, 2020). Access to instructional materials such as textbooks, technology, and other educational tools further supports learning by providing students with the resources they need to engage with the curriculum effectively (UNESCO, 2021). Additionally, the learning environment, which includes both the physical

infrastructure and the social climate of the school, plays a pivotal role in student success (Mulera et al., 2017).

In addition, Exogenous factors significantly influenced student performance (Kafumbu, 2020), shaping opportunities for success (Chimombo et al., 2014). For example, active parental involvement, such as attending school meetings and monitoring progress, enhanced student outcomes (UNESCO, 2021). Parents with higher education levels provided better guidance and support at home, improving their children's academic performance (Banda, 2019). Socioeconomic status played a pivotal role, with students from higher-income families accessing quality textbooks, private tutoring, and stable internet connections, while those from lower-income households faced challenges like inadequate materials and financial instability (Ng'ambi, 2010; Nsapato, 2017). Distance from school further impacted outcomes, with long commutes reducing study time and energy, while closer proximity allowed for more academic focus (Baliyan and Khama (2020). Parental hood status whether students had both parents, one parent, or were orphans also affected emotional and financial support, directly influencing learning outcomes (Chimombo, 2018). These factors collectively shaped students' experiences, underscoring the need to address disparities for equitable learning opportunities.

In Malawi, collaboration between international funders and the government has played a key role in strengthening the education system across all school types, with a particular focus on underserved areas such as CDSSs (MasterCard Foundation, 2018). Financial aid and capacity-building programs have been provided through these partnerships. For example, the European Union allocated EUR 36.5 million in 2015 to expand 21 CDSSs, followed by USAID's US\$ 90 million in 2017 for constructing 250 new CDSSs. Similarly, SAVE the Children contributed US\$ 15 million in 2018 to expand 10 CDSSs in urban areas, and WFP allocated US\$ 5 million for constructing 5 CDSSs. The African Development Bank (AFDB) also supported CDSSs between 2002 and 2007 (MasterCard Foundation, 2018). However, despite these interventions, research indicates that significant improvements in the national examination outcomes of CDSSs and other public schools have not been achieved (MoEST since 2009; Ng'ambi, 2010 and Nsapato, 2017).

Despite substantial investments and targeted interventions to improve educational outcomes across all public schools, persistent disparities in academic achievements, particularly in national examinations, raise concerns about the effectiveness of these efforts (Chiwaya, 2020; Kafumbu, 2020; Ministry of Education – MESA, 2017-2022). While equitable resource distribution should ideally result in consistent academic outcomes across public schools, significant gaps in performance, particularly in CDSSs, but also across other school types, suggest deeper systemic challenges that hinder the effective use of resources (Chiwaya, 2020). Furthermore, socio-economic and geographical factors exacerbate the unequal distribution and utilization of resources, widening achievement gaps (Kafumbu, 2020). Addressing these barriers is essential to ensuring that all students, regardless of their school type or background, have equitable access to quality education and the opportunity to reach their full academic potential.

The enrolment of students in Malawi presents a multifaceted landscape across different educational institutions, reflecting variations in accessibility, infrastructure, and socio-economic circumstances. Figure 1 provides an overview of the increasing count of secondary schools, encompassing both public and private sectors. This expansion underscores the efforts to broaden educational opportunities and accommodate the growing demand for secondary education in the country.

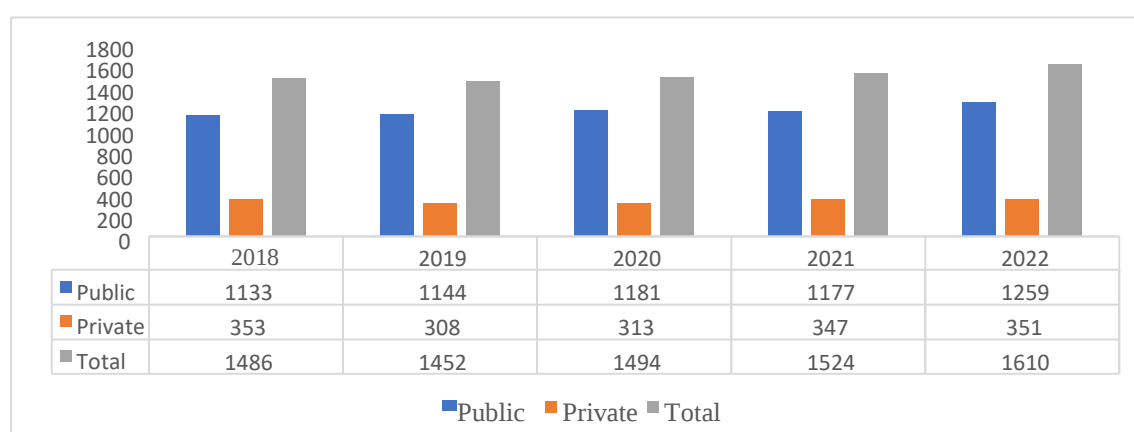


Figure 1: Trend in the number of secondary schools in Malawi (EMIS 2022, page 58).

In the current context of Malawian secondary education, there is a blend of progress and challenges. While there have been strides in expanding access to education with

increased enrolment in both public and private secondary schools, concerns persist about the overall quality of education (Chiwaya, 2020; Kafumbu, 2020; Ministry of Education – MESA, 2017-2022). Academic data from various secondary school settings reveal disparities, indicating varying levels of student achievement (Ministry of Education-EMIS, 2014-2022). Despite collaborative efforts, the quality of secondary education remains a concern, with noticeable differences in instructional quality affecting student performance, particularly in the Malawi School Certificate of Education (MSCE) exams, as reported by the World Bank (2019, cited in MoEST, 2019). Figure 2 offers a visual comparison of performance across different types of secondary schools nationwide.

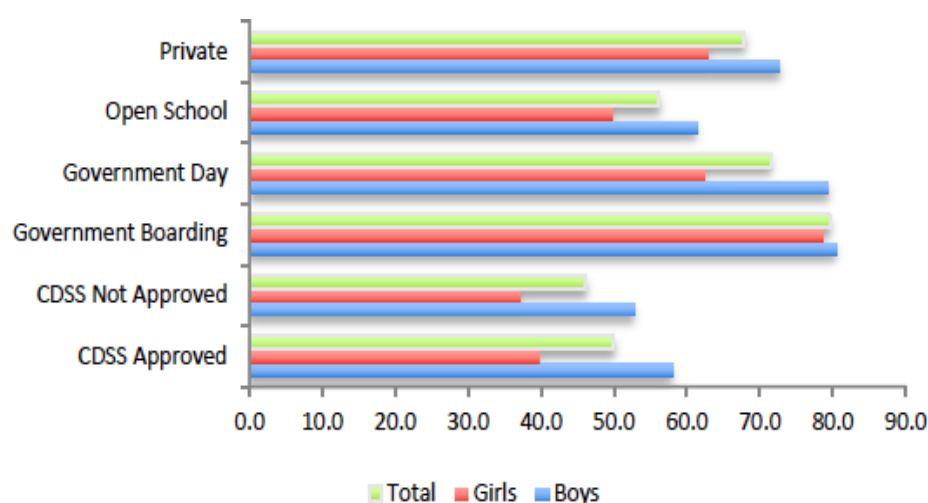


Figure 2: MSCE Performance across different types of Secondary Schools (MESA, 2019, 53)

The data provided in the Malawi Education Sector Analysis (MESA), as reported by the Ministry of Education (MoE) since 2015, with a particular emphasis on the 2019 report, draws attention to a concerning pattern regarding academic performance across different types of secondary schools in Malawi. Specifically, government boarding schools, government day secondary schools, and private secondary schools have consistently demonstrated superior academic outcomes compared to CDSSs. This trend highlights a significant challenge within Malawi's education system, particularly at the MSCE level. The disparity in academic achievement between CDSSs and other types of secondary schools raises questions about the factors influencing educational quality and effectiveness in these institutions.

Similarly, the disparities in MSCE performance across different types of secondary schools in Mangochi district are also evident. Figure 3 shows data collected from numerous schools across all nine secondary school clusters, illustrating the varied performance levels observed within each cluster. The official results of the MSCE, administered by the MANEB, from 2021 to 2023 in Mangochi district highlight notable variations in student participation rates, pass rates, and highest scores achieved in both public and private secondary schools.

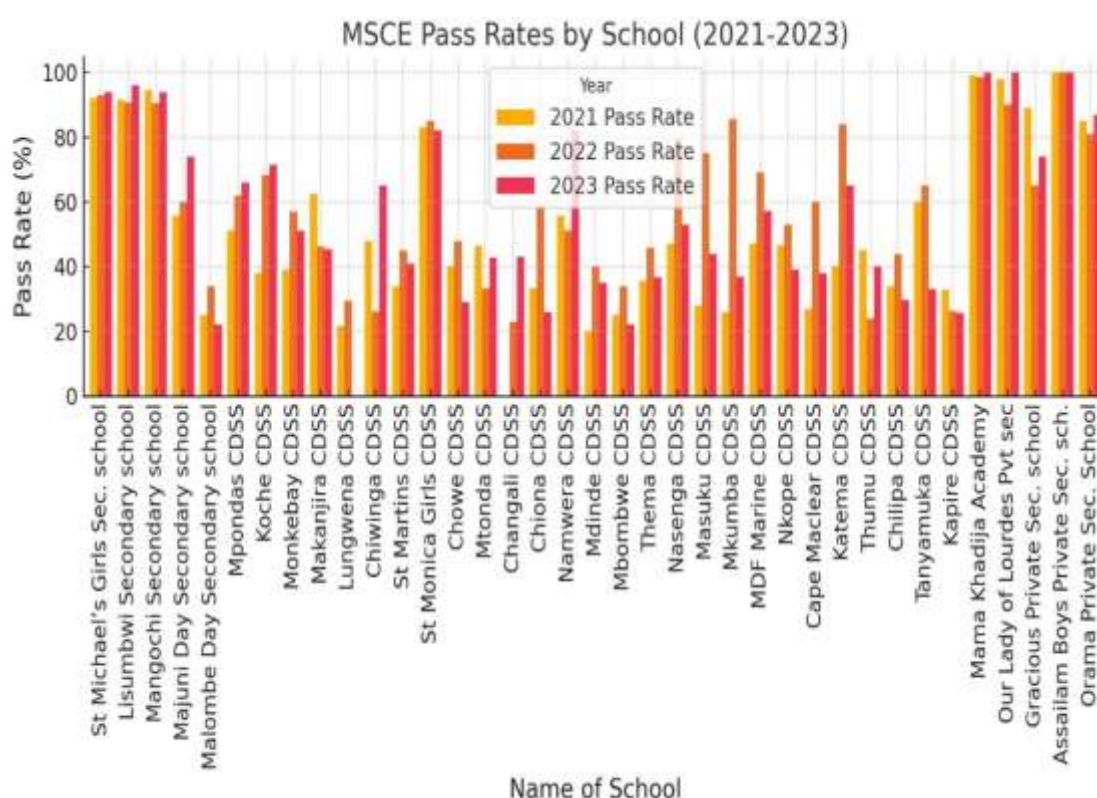


Figure 3: MANEB official MSCE results (fieldwork from the school database, 2024).

Based on the data in Figure 3, there exist disparities in MSCE performance among different types of secondary schools in Mangochi district. NSS, DCBSSs, and PSSs consistently outperform CDSSs. On the other hand, within the CDSS category itself, there are also notable variations in performance. These differences in performance underscore the effects of external factors such as school interest levels, cultural beliefs, and socioeconomic and family backgrounds, as well as internal factors like resource availability, teaching quality, and school infrastructure on student outcomes (interviews with head-teachers, 2024). To bridge the performance gap across all types of schools,

it is crucial to address the challenges faced by lower-performing institutions through targeted interventions and by adopting best practices observed in higher-performing schools.

Despite ongoing efforts to improve educational outcomes, pass rates in the MSCE examinations have consistently remained low, highlighting the need for targeted interventions. Historical data since 2004 reveals a troubling trend, with an overall pass rate of only 45%. Specifically, CSSs have achieved a pass rate of 68%, while CDSSs have only managed 38% (MoEST, 2014). This disparity persisted through 2020, where the overall pass rate was 41%, with CSSs performing significantly better at 65%, compared to just 32% in CDSSs (MoEST, 2020). These persistent disparities emphasize the ongoing challenges in achieving equitable educational outcomes across different types of secondary schools in Malawi. Factors such as resource allocation, teacher quality, and socio-economic disparities continue to contribute to these differences, particularly in CDSSs, where students often face additional barriers that hinder their academic success (Chiwaya, 2020; Kafumbu, 2020). Addressing these gaps is crucial for achieving greater equity and improving educational outcomes for all students, regardless of their school type.

Recent studies examining the landscape of secondary education in Malawi consistently affirm the significance of the sector for the development of practical employment skills, as outlined in the National Education Sector Plan (NESP) for the years 2020-2030. Despite this recognition, there is an overarching concern regarding the pass rates in the MSCE examinations, a metric widely used to gauge the quality of education in the country (Nyasulu, 2020). This raises questions about the varying performance across different types of secondary schools, particularly focusing on private schools, national secondary schools, CDSSs, and CSSs. Research shows that PSSs, NSSs and District CSSs achieve better pass rates than CDSS (Kafumbu, 2020), suggesting potential disparity in quality education among these school types, emphasizing the need for a more thorough examination of contributing factors.

Over the past decade, the MoE has presented data on public university intakes in Malawi which reveals a discouraging pattern of negative growth in higher education accessibility specifically for CDSSs, considering that the CDSSs constitute more than 75% of all secondary schools in Malawi (MoE, 2022). This data (see Table 1) suggests

that the current university intake trends do not favour the CDSSs, raising concerns about the equitable opportunities for higher education across different types of secondary schools in the country.

Table 1 : Higher education students' admission rate from CDSSs.

Public University	Total Selected	Total Selected from CDSSs	Access Rate by CDSSs
Kamuzu University of Health Sciences	600	43	7%
Mzuzu University	1366	216	16%
University of Malawi	2012	227	11%
Malawi University of Science and Technology	620	67	11%
Lilongwe University of Agriculture and Natural Resources	1207	188	16%
Malawi University of Business and Applied Sciences	1605	130	8%

Source (EMIS, 2020/2021)

Nonetheless, there is a rising trend in the enrolment statistics for public universities, as depicted in the Figure 4. But, there is a clear trend indicating that CDSSs are not contributing significantly to the public university intake (Chiwaya, 2023). For example, according to the Ministry of Education-MESA, 2021/2022 report (MoE, 2022), out of the 7410 students selected into public universities, only 871 students from CDSSs were chosen, constituting merely 12% of the total selected students.

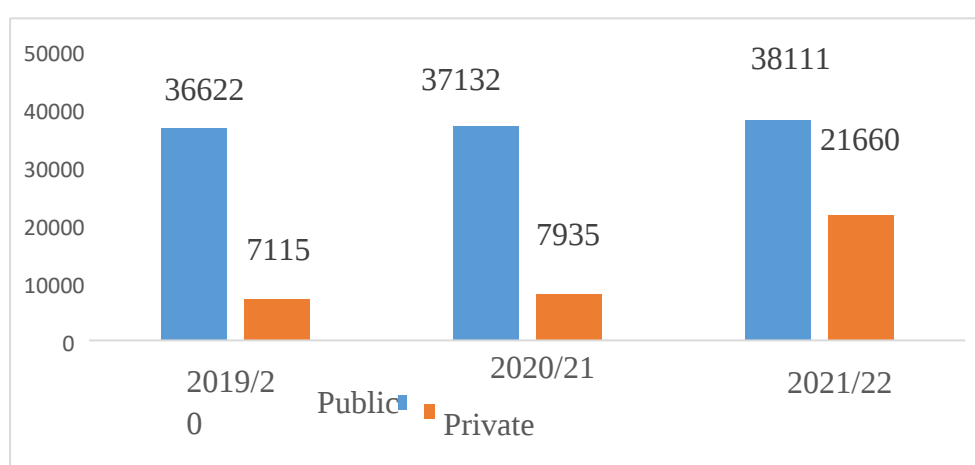


Figure 4: Total number of undergraduates enrolled in higher education institutions between 2019 and 2022: (EMIS, 2022, p 119)

1.3 Statement of problem

Within the diverse sphere of secondary education, a disconcerting trend has surfaced, suggesting that CDSSs display relatively lower levels of academic performance in the MSCE examinations compared to other types of secondary school settings (MoE-MESA and EMIS, 2017-2023). In the educational landscape of 2023, the disparities in performance among secondary schools revealed a compelling narrative. CDSSs recorded a lower pass rate of 45.53%, closely trailed by private secondary schools at 58.08%, while CSSs asserted their dominance with an impressive 68.06% pass rate (MoE, 2023). This concerning trend, notably prevalent in Mangochi District, is exemplified by the 2023 MSCE-MANEBS results where the results reflect significant disparities among schools (MoE, 2023).

Despite several educational policy interventions (MacJessie-Mbewe and Mwambucha, 2015 and MoEST, 2013), existing literature in Malawi (Mlagha, 2016, Maonga, Chirwa, and Nyoni, 2024; Chirwa and Kazembe, 2019; Mlangeni and Chiotha, 2016; Nyasulu, 2020 and Luciano, 2019) does not demonstrate comprehensive examinations of the effectiveness of educational inputs across secondary school types. This critical concern highlights the significant disparities in academic performance among various types of secondary schools, underscoring the urgent need to identify and understand the factors driving these variations, particularly those influencing MSCE results. The stark contrast in achievement rates and performance metrics calls for an in-depth investigation into the underlying factors shaping MSCE outcomes, providing a foundation for exploring the complexities of the educational landscape. Furthermore, while studies conducted in other contexts (Wambui, 2019; Maganga, 2016; Ndambo et al., 2021; Akyeampong (2018); Maluma and Banja, 2019) offer valuable insights, most fail to address the unique secondary school settings within Malawi's education system. This study, therefore, seeks to bridge this gap by uncovering the root causes of these disparities and proposing practical solutions to address the challenges within the Malawian education sector.

1.4 Objectives of the Study

The main objective of this study was to investigate the impact of various educational inputs on varying academic performance at different secondary school settings in Mangochi district.

1.4.1 Specific Objectives

This study sought to achieve the following specific objectives:

- 1) To determine the level of educational inputs usage in different secondary schools in Mangochi district
- 2) To assess the student academic performance in different secondary schools in Mangochi district.
- 3) To analyze the relationship between endogenous and exogenous educational inputs and students' academic performance at MSCE level in different secondary schools in Mangochi district.

1.5. Research questions

This study was guided by the following research questions:

1. What specific educational inputs are utilized in various types of secondary schools in Mangochi District?
2. What is the extent of the contribution of each educational input to students' academic performance in MSCE across different secondary school settings in Mangochi district?
3. What is the relationship between exogenous and endogenous educational inputs and students' academic performance at MSCE in different secondary school settings in Mangochi district?

1.6. Research questions

This study was guided by the following research questions:

4. What specific educational inputs are utilized in various types of secondary schools in Mangochi District?
5. What is the extent of the contribution of each educational input to students' academic performance in MSCE across different secondary school settings in Mangochi district?
6. What is the relationship between exogenous and endogenous educational inputs and students' academic performance at MSCE in different secondary school settings in Mangochi district?

1.7 Significance of the study

This study is crucial as it directly informs educational decisions by investigating the effect of educational inputs on class performance in diverse secondary school settings. Its uniqueness lies in its comprehensive examination of various educational inputs, offering insights that can inform policies, advance academic literature, and provide practical implications for educators. The anticipated contributions include informed policy decisions, advancements in academic understanding, and practical insights for educators to enhance teaching and learning experiences. The study's significance is highlighted by its potential to shape national development through the proposed methods of addressing education performance disparities across various secondary school types. Both the investigative methodology and results obtained add into the policy and planning literature the power to significantly impact educational practices and outcomes.

1.8 Limitation of the study

The study's potential drawbacks, including its limited generalizability to other schools or participants due to specific characteristics and its exclusive focus on the Mangochi district, were addressed through various strategic approaches. First, to enhance the study's applicability and relevance, the researcher implemented a methodical selection of a diverse sample that encompassed various demographics, school types, and geographical areas. This deliberate sampling strategy aimed to minimize limitations and strengthen the study's findings, making them more pertinent to all six education divisions in Malawi. Second, by incorporating a broad representation of schools and educational settings, the study sought to offer insights that are not only robust but also applicable across different contexts within the nation.

1.9 Definition of key terms.

Educational inputs: factors, resources, and processes within the educational system that contribute to students' learning experiences.

Endogenous inputs: factors or variables that directly impact academic output, such as teaching and learning resources, physical facilities, teachers' characteristics or student-teacher ratio.

Exogenous inputs: factors that could externally influence academic performance include various aspects of family background, such as socioeconomic status, parental education levels, and the number of siblings in the household.

Academic Output: measurable outcomes and achievements of students within an educational system such as the Malawi School Certificate of Education (MSCE).

Cluster: categorization of schools into groups based on shared characteristics, such as school type or geographic location.

Education Quality: the overall effectiveness of the educational system in facilitating student learning and development.

Conventional Secondary School: a traditional or standard secondary school that follows a typical curriculum and educational approach without specialized features or focus.

Community Day Secondary School: a school established to cater for students within the community.

National Secondary School: a secondary educational institution recognized at the national level.

Private Secondary School: a non-governmental institution that is independently owned and operated.

Pupil-Teacher Ratios: These are calculated as the number of teachers in state education in a country or region or school divided by the respective school enrollment in that area or school, serving as a measure of resources.

1.10 Chapter Summary

Through document analysis, this chapter has examined how different types of secondary schools compare in terms of MSCE performance. Specifically, it has highlighted the relatively lower performance of CDSSs compared to other categories of secondary schools, including CSSs, PSSs, and NSS. Additionally, the chapter has provided a detailed clarification of the statement of the problem, the purpose and objectives of the study, research questions, significance of the study, limitations, and the definition of key terms.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter provides a concise overview of the existing literature relevant to the present research study. It specifically delves into various perspectives offered by prominent researchers concerning the impact of various educational inputs on varying academic performance. In doing so, it identifies a gap in the current literature, signalling the need for further investigation into the specified topic.

2.2 Educational Inputs and Student Performance Globally

Armando and Guilherme (2023) conducted a study in Brazil to explore the factors affecting academic performance in 'Escolas Noturnas' (Night Schools). Their research revealed that academic achievement in Night Schools was influenced by various factors, including the availability of school resources, teacher quality, and the socio-economic status of students. Schools with better resources and qualified teachers tended to exhibit higher academic performance. Similarly, the current study investigated the impact of educational inputs on academic performance across different secondary school settings. It examined how factors such as school resources, teacher quality, and socio-economic conditions influenced MSCE outcomes. The findings of this research contributed to a deeper understanding of the factors driving disparities in academic performance among different types of secondary schools, aligning with the broader focus of similar studies.

Ghafoor and Asma (2019) conducted a study comparing public and private educational institutions in the Philippines using secondary data. Their research highlighted disparities in educational policies, curriculum, and school management practices between public schools, which influence student performance and outcomes, particularly within local communities. The study emphasized the importance of

implementing context-specific interventions to enhance educational quality. However, the reliance on secondary data may have limited the depth of the analysis and hindered the capture of nuanced contextual factors influencing educational outcomes. While the study focused on differences in educational policies, curriculum, and school management practices, the current study expanded on this by investigating additional factors contributing to disparities in student performance, such as teacher quality, socio-economic status, and parental involvement.

Keith et al. (2020) conducted a study in the United States exploring the impact of effective classroom behavior management on middle school student achievement. The study aimed to determine whether the use of effective classroom behavior management, combined with teacher preparedness, diverse instructional methodologies, and appropriate assessments utilizing teaching and learning resources, contributed to enhancing student performance. The findings demonstrated that students achieved better outcomes when teachers implemented effective classroom behavior management practices alongside well-prepared lessons, varied instructional approaches, and appropriate assessments with teaching and learning resources. The current study, however, further investigated external factors that may influence student achievement, including student demographics, socio-economic status, and parental involvement, which were not a central focus in Keith et al.'s research.

Waheed et al. (2020) conducted a study in India that focused on predicting students' academic performance using deep learning models based on extensive data from Virtual Learning Environments (VLEs). The research revealed that students faced academic challenges when not adequately monitored, controlled, and provided with counselling, as identified through the analysis of VLE big data. These factors were correlated with poor academic performance. The study underscores the significance of effective monitoring, control, and counselling measures within VLEs. However, the study's limited sample scope, which excludes certain secondary school settings, may restrict the applicability of its findings. This omission could undermine the understanding of how monitoring, control, and counselling measures within Virtual Learning Environments (VLEs) function across diverse educational contexts. Additionally, while the study emphasizes the importance of these measures in improving academic

outcomes, it did not fully explore other influential factors affecting student performance, such as teacher quality, curriculum design, or resource accessibility.

In their study, Banda and Simpemba (2019) explored the utilization of science mobile laboratories in teaching practical science lessons in Kitwe District, Zambia. The research focused on assessing the competencies of teachers in using these laboratories and identifying the challenges they face. The study revealed that while the quality of the apparatus in these mobile laboratories was generally good, the quantity per unit was insufficient compared to class sizes, negatively impacting the effectiveness of practical lessons. Additionally, the research highlighted that teachers' qualifications influenced their ability to effectively use the laboratory units. Financial constraints in acquiring consumables for practical lessons were also identified as a significant challenge. However, despite these issues, the study found that teachers generally found the mobile laboratory units useful. The research was limited by its focus on a small geographic area and its use of purposive sampling, which may restrict the generalizability of its findings. Furthermore, while the study identified key challenges, it did not provide in-depth quantitative data on how these issues directly affected student performance. In contrast, the current study provided quantitative data to better understand these impacts.

Wambui (2019), conducted a study in Kenya examining factors that influence students' academic performance in the Kenya Certificate of Secondary Education (KCSE). Their findings revealed that the student-teacher ratio, peer pressure, school resources, student motivation, and family background are among the factors affecting students' performance. The current study seeks to extend this research by investigating whether students at Community Day Secondary Schools encounter comparable challenges affecting their academic performance when compared to other secondary school settings. While the study offers valuable insights into the factors affecting students' academic performance in Kenya, it's crucial to acknowledge its limitations regarding comprehensiveness, generalizability, and the complexity of comparing various types of secondary schools.

Maganga (2016) conducted a similar study in Tanzania, aiming to identify issues influencing academic performance in secondary schools within the Ilala district. The study's findings included challenges faced by grade 12 students, such as problems with English proficiency and inadequate supply of teaching materials, including Science

textbooks, laboratories, and issues related to the student-teacher ratio. Although the study highlights challenges encountered by grade 12 students, such as difficulties with English proficiency and insufficient teaching materials, it neglected other critical factors such as socio-economic status, teacher quality, or parental involvement, which can profoundly affect academic performance. This narrow focus might restrict the depth of comprehension regarding the intricate dynamics that influence students' academic outcomes.

Maluma and Banja (2019) explored factors affecting pupil academic performance in selected grant-aided secondary schools in Zambia at Grade 12 level from 2011 to 2017. The study aimed to identify contributors to high and low academic performance and measures implemented for improvement in low-performing schools. The findings suggested that constant proprietor support, competent administrators, and ample infrastructure were associated with excellent performance in high-performing schools. Conversely, inconsistent proprietor support and incompetent administrators were linked to low academic performance in selected low-performing schools. Focusing solely on grant-aided schools may overlook factors impacting academic performance in other types of institutions. Additionally, the study's reliance on data from 2011 to 2017 might miss changes in educational practices. It also fails to thoroughly consider influential factors like teacher quality and student motivation, limiting understanding of academic performance dynamics.

Ndambo et al. (2021) conducted a study titled "Effects of Availability of Teaching and Learning Resources on Teacher Performance in Public Secondary Schools in Kitui County, Kenya," which aimed to investigate the impact of resource availability on teacher performance. Despite employing a rigorous mixed-methods approach and a robust theoretical framework, the study found no statistically significant relationship between the availability of resources and teacher performance. The study's limitations include its failure to consider other influencing factors such as teacher motivation and administrative support, its geographical limitation to Kitui County, which affects the generalizability of the findings, and an overreliance on quantitative data that may have diminished the depth of qualitative insights.

2.3 Educational Inputs and Student Performance in Malawi

Maonga, Chirwa, and Nyoni (2024) conducted a study on the factors affecting the provision of quality education in CDSS in Mangochi District. Their research highlighted significant challenges such as inadequate facilities, insufficient teaching and learning resources, and a lack of community-school engagement, all of which hinder the delivery of quality education in these schools. The study employed a qualitative case study design, involving a small sample of two head teachers, two teachers, and twenty students, using focus group discussions and semi-structured interviews for data collection. While the findings provide valuable insights into the specific barriers faced by CDSS in Mangochi, the study's limited sample size and reliance on qualitative methods may restrict the broader applicability of its conclusions. Additionally, the focus on thematic content analysis, though thorough, might have missed other quantitative factors that also contribute to the quality of education in this context.

Vizyalona, Chirwa, and Nyoni (2024), in their study titled “Challenges Facing the Implementation of Chemistry and Physics as Separate and Stand-Alone Subjects in the Revised Secondary School Curriculum in Malawi: A Case Study of Blantyre District”, aimed to investigate the obstacles to the effective teaching of chemistry and physics in secondary schools. The study revealed that teachers face numerous challenges, including a shortage of certified teachers, inadequate resources and laboratories, a lack of textbooks, insufficient teacher orientation, poor teaching and assessment methods, and a lack of supervision. Conducted in two secondary schools in Blantyre District, Malawi, the qualitative case study involved 28 participants, including head teachers, chemistry and physics teachers, and students. Despite providing valuable insights into the barriers to effective science education, the study was limited by its small sample size and geographic focus, which may limit the generalizability of its findings. Moreover, while the study offered recommendations such as hiring more trained instructors, constructing well-equipped laboratories, and enhancing teacher preparation and oversight, it did not consider alternative strategies to address these challenges in resource-limited settings.

Nyasulu (2020) conducted a study to investigate factors influencing low academic performance among learners in Seventh Day Adventist’s (SDA) secondary schools in

Malawi. Employing a descriptive research design within a mixed research approach, the study identified several key elements affecting educational outcomes, including late commencement of lessons, discipline issues, learner enrolment rates, influence of learners' pocket money, and inadequacies in textbooks and laboratory materials. However, the study's exclusive focus on SDA secondary schools in Malawi may limit the generalizability of findings to other school types. Furthermore, the use of a descriptive research design might restrict in-depth analysis of factors contributing to low academic performance. Additionally, while certain influential factors like late commencement of lessons and discipline issues were identified, others such as teacher quality and socio-economic status were not thoroughly explored.

Nyirenda (2021) conducted a study to investigate the impact of resource distribution on learning outcomes in nine selected primary schools in Nkhata Bay District. The findings indicated an unequal distribution of resources, with schools closer to the trading center having more resources and better performance. This disparity was observed to influence pupil selection for secondary education. The study recommended fair and equitable resource distribution to enhance equity in access to secondary education. Although the study highlights an unequal distribution of resources and its influence on learning outcomes, it lacks in-depth exploration of the underlying factors driving this inequality. Understanding the root causes of resource disparity could offer more actionable insights for policymakers and educators. Additionally, the study's reliance on observational data could not fully capture the complexities of resource distribution dynamics and their impact on learning outcomes.

Luciano (2019) investigated the challenges faced by CDSSs in implementing English study circles in Blantyre rural. The study employed a qualitative research design to explore the relationship between teachers' commitment and learners' efforts, identify obstacles encountered by learners, and assess the initiatives teachers take to address these challenges. Using purposive and stratified random sampling, data was collected through questionnaires for learners and interviews for teachers. The findings highlighted significant challenges such as lack of participation, distance to school, extensive English content, limited vocabulary, and insufficient resources, all compounded by poor management of the study circles. The study's weaknesses include its limited scope, which might not capture broader systemic issues, and the reliance on

qualitative data alone, which may not provide a comprehensive view of the underlying problems.

Kunje (2017) delved into the relationship between educational inputs and achievement rates at the Basic Education level in Malawi, revealing that rapid increases in enrolment compromise pupil-teacher ratios, pupil-classroom ratios, and pupil-textbook ratios, potentially undermining the quality of education. This study primarily relied on quantitative data, which, while valuable, might restrict the depth of analysis and overlook the nuanced perspectives and experiences of significant stakeholders such as teachers, students, and parents. Incorporating qualitative research methods, such as interviews or focus groups, alongside quantitative techniques could enrich the understanding of the intricate dynamics within the education system. Such a mixed-methods approach would provide a more comprehensive analysis, capturing the lived experiences and contextual factors that influence educational outcomes.

Mlangeni and Chiotha (2016) conducted a study to identify factors influencing subpar academic performance in physical science examinations at the MSCE and Junior Certificate of Education (JCE) levels. By focusing specifically on the CDSSs within the Lilongwe Rural West Education District, the research unveiled a significant performance disparity between unapproved CDSSs and approved CDSSs, day secondary schools, and national secondary schools in Lilongwe. A notable contributor to academic struggles was the substantial number of CDSS students operating from home or self-boarding hostels, resulting in a lack of home support and parental involvement. However, the study solely concentrated on CDSSs and specifically analysed subpar academic performance in physical science examinations at the JCE level. Hence, the study design could not thoroughly tackle potential confounding variables or underlying causes of this performance disparity.

Chimombo and Maliro (2020) extensively explored the influence of classroom management on learning outcomes at public secondary schools in Malawi, emphasizing the positive impact of effective practices such as strong teacher-student relationships and discipline strategies on academic achievement. Building on this, the current study aims to delve into the dynamics of classroom management, specifically investigating its application in CDSSs in Malawi. However, this study exclusively focused on public secondary schools, potentially restricting the applicability of findings to other

educational contexts or school types. Moreover, while the study underscored the beneficial effects of effective classroom management practices on academic achievement, it did not extensively investigate the challenges or obstacles encountered in implementing these practices across various school settings.

Mzedi and Mhango (2020) expanded upon this perspective by investigating the effects of classroom characteristics, including physical facilities and teacher-student ratios, revealing their significant influence on student achievement. Their research provided valuable insights into the broader landscape of academic outcomes, considering various factors shaping the learning environment. In the context of the current study, these findings serve as a foundation for exploring how classroom management, physical facilities, and teacher-student ratios impact learning across all secondary school settings in Malawi, with a specific focus on CDSSs. However, the study's focus on classroom characteristics such as physical facilities and teacher-student ratios may not fully capture the complexity of factors influencing student achievement. While this research provides valuable insights into specific aspects of the learning environment, it undermines other important variables such as teacher quality, curriculum effectiveness, or socio-economic factors, which also significantly impact academic outcomes.

Similarly, Chirwa and Kazembe (2019) conducted a study with a focus on determining factors influencing student academic performance in secondary schools in Thyolo District. While not explicitly centered on educational inputs, their research significantly contributes to understanding various factors, including school-related inputs that can impact student outcomes. However, a limitation of their study is that it may not provide a comprehensive analysis of the specific educational inputs and their impact on student outcomes. While it sheds light on various factors affecting academic performance, including school-related inputs, it does not thoroughly explore the nuances of these inputs or their relative significance compared to other factors.

Mulera et al. (2017) employed advanced methodologies to analyse SACMEQ I, II, and III data in Malawi, with a focus on factors influencing pupil performance in primary education. Unveiling intricacies related to socioeconomic status, pupil-teacher ratios, and head teachers' time allocation at the primary level, their study yielded valuable insights. However, its scope was confined to primary education. In contrast, the present

study will expand this investigation to the secondary school level. A primary goal is to contextualize and explore whether similar challenges hinder academic performance in CDSSs. However, their research was limited by its exclusive focus on primary education, which may not capture the potential differences and challenges at the secondary school level. While their findings are valuable, they do not fully address the unique dynamics that affect academic performance in secondary education settings, including Community Day Secondary Schools.

Mwenda and Mgomezulu (2018) investigated the impact of monetary incentives on teacher retention and attraction in rural primary schools. Their research, conducted in the Salima District, aimed to evaluate the effectiveness of a rural allowance in influencing teachers' decisions to stay in rural schools and attract urban teachers. The findings revealed that the existing rural allowance was insufficient to retain teachers in rural areas or attract urban teachers, resulting in poor performance in rural schools. The study recommended tailoring incentives based on the severity of rural challenges and implementing additional measures to address issues faced by rural teachers. However, the study fell short in providing specific implementation strategies for these recommendations. It primarily centered on monetary incentives, disregarding other pivotal factors affecting teacher retention and recruitment.

2.4 Consistencies and Inconsistencies in Global and Malawian Studies

The studies on educational inputs and student performance, both globally and in Malawi, reveal notable consistencies and inconsistencies. Globally, studies by Armando and Guilherme (2023), Ghafoor and Asma (2019), and Keith et al. (2020) highlight the importance of factors such as teacher quality, school resources, socio-economic status, and classroom management in influencing academic performance, aligning with the findings of the current study in Mangochi District, Malawi, which similarly emphasizes the role of these factors in MSCE outcomes. However, global studies, such as those by Waheed et al. (2020) and Banda and Simpemba (2019), reveal gaps in understanding the broader contextual factors, such as socio-economic conditions or resource availability, that influence student achievement. In contrast, studies in Malawi, such as those by Maonga et al. (2024) and Vizyalona et al. (2024), underscore local challenges like inadequate resources, teacher shortages, and poor infrastructure, affecting the quality of education and performance. Despite these

common themes, studies in Malawi often face limitations in generalizability due to small sample sizes and regional focus, while global studies sometimes lack consideration of socio-cultural nuances or fail to capture the complexities of resource distribution and its effects on student outcomes. These global and local studies, while similar in their identification of critical educational inputs, highlight the need for context-specific interventions to address the challenges affecting educational performance.

2.5 Theoretical Framework

The framing of this study was informed by the Human Capital Theory (HCT), formulated by Becker (1962), which posited that education is a crucial investment in human capital, improving skills, knowledge, and productivity. While HCT primarily focused on the human aspects of education, such as the development of individuals through knowledge and skill acquisition, the study acknowledged the role of both human and non-human inputs in the educational process. In the context of secondary schools, the theory was adapted to explore how various educational inputs contribute to human capital development, not only through human factors like teacher qualifications and training but also through non-human resources such as learning materials, infrastructure, and technology. These inputs collectively shape the learning environment and influenced the quality of education, which, in turn, impacted students' skills and knowledge acquisition.

The rationale for adopting this theory lay in the understanding that achieving quality education required investments in both human resources (well-qualified teachers, skilled administrators, and educational leaders) and non-human resources (adequate learning materials, infrastructure, and technology). These elements worked synergistically to enhance the overall educational experience and, by extension, the human capital of students. HCT, in this study, served as a framework for examining how these different inputs, human and non-human, contributed to the development of students' abilities and their potential for future productivity.

To achieve this, the study analyzed the accessibility and adequacy of educational inputs in secondary schools, focusing on their distribution and utilization across various school types. It also explored the relationship between these inputs and students' academic

performance using data collected through surveys, interviews, and document analysis. This involved assessing teacher qualifications, availability of learning materials, infrastructure conditions, and the integration of technology within schools. By triangulating quantitative and qualitative data, the study provided a comprehensive understanding of how human and non-human factors interacted to influence learning outcomes. The findings will contribute to identifying targeted interventions for resource allocation, teacher development, and policy reforms aim at improving the quality of education and human capital development in secondary schools. Thus, while the HCT traditionally emphasized human elements, this study extended its application to include a holistic view of how various educational inputs in diverse school settings, ranging from teacher qualifications to classroom resources, combined to influence students' educational outcomes and contributed to the broader development of human capital. This approach acknowledge that both human and non-human factors are interdependent in shaping the effectiveness of education and, ultimately, the human capital outcomes of students.

2.6 Conceptual framework

Conceptually, this study adopted a “Pedagogical Ecology” approach by Daniel and Debra (2009), synthesizing principles from various educational theories. The theory stressed the correlation between educational methods and the surrounding ecological system, emphasizing how education interacts with the environment. It considered the holistic learning environment, encompassing physical space, social dynamics, teaching methods, curriculum, and resources, emphasizing their collective impact on education outcomes. Specifically, the study explored unique teacher characteristics, external inputs, and internal school dynamics. Thus, this framework (see Figure 5 below) guided the investigation of how these elements collectively influenced academic performance in secondary school settings.

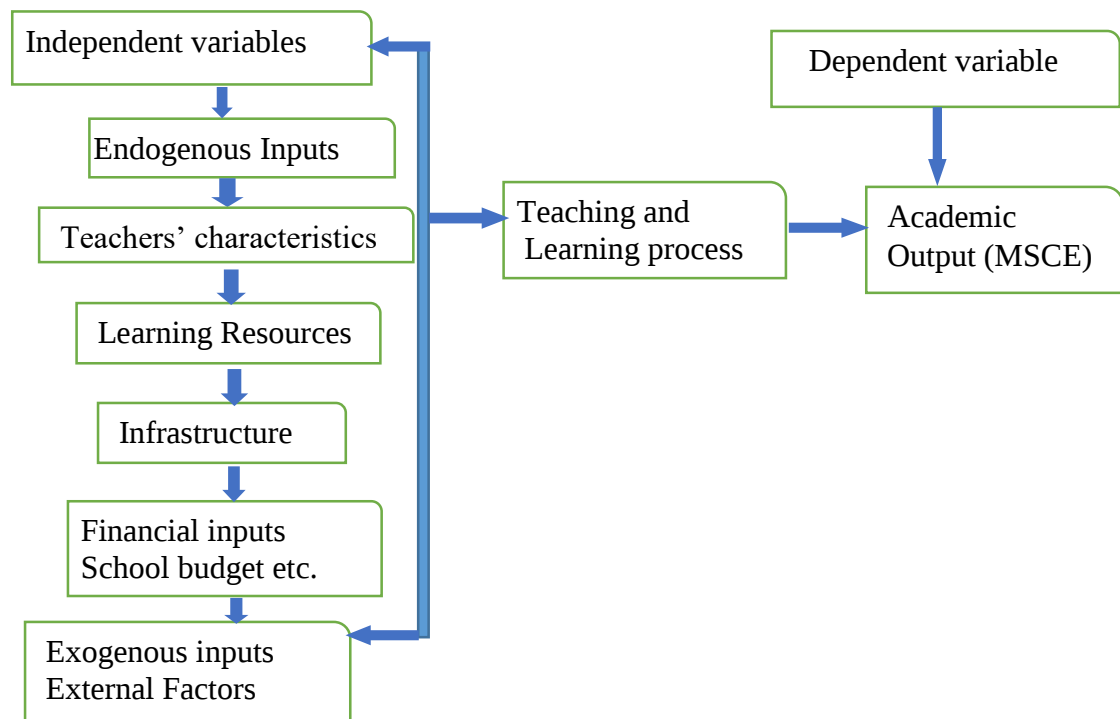


Figure 5: Conceptual Framework (Source: Researcher's study)

Endogenous Inputs

These are the fundamental components that shape the learning environment, encompassing the calibre of teaching personnel, accessibility of learning materials, and the sufficiency of educational infrastructure. Measurements were conducted to assess the attributes of teachers, including the quality and qualifications of teaching staff, the availability of learning resources, the ratio of teachers to students, the student-textbook ratio, and the adequacy of educational infrastructure.

Financial inputs

The allocation and utilization of the school budget also play a pivotal role in academic output of the students. Financial inputs, including the school budget, teachers' salaries, and other benefits, were measured to assess their potential influence on academic performance across the different school settings.

Exogenous inputs

These include family background characteristics such as parental hood status, parents' educational level, occupation, the number of siblings, and walking distance for the day

scholars. Through this investigation, the aim was to gain valuable insights into the broader socio-economic context and its impact on students' educational experiences and outcomes.

Academic Output

This is the outcome of the educational process, academic performance, which encompasses students' grades at the national examinations level especially the Malawi school certificate of education. It served as a measure of the effectiveness of the educational inputs. This conceptual framework provided a structured view of how various elements interacted in the educational process, ultimately influencing academic output. It emphasized the need for continuous improvement, considered external influences, and acknowledged the broader context within which education occurred.

2.7 Research gap

Whilst existing literature acknowledges the significance of educational inputs, it often lacks a detailed examination of the specific challenges faced by different school types. Previous studies typically provide only surface-level analyses and overlook the diverse dynamics that may influence the effectiveness of educational inputs across secondary school settings, especially in specific regional contexts. The identified research gap highlights the need for deeper insights into how variations in teaching materials, teacher quality, and infrastructure uniquely affect academic performance in different types of secondary schools in the specific context of Mangochi district.

2.8 Chapter Summary

Existing body of literature draws attention to the widespread concerns of declining educational standards globally, especially in developing nations. This chapter has shown that numerous scholars have closely observed and acknowledged the evident disparities and inconsistencies in CDSS performance within the MSCE framework when compared to private, conventional, and national secondary schools. However, despite significant government interventions in Malawi, literature lacks comprehensive information on the efficiency of educational inputs on class performance in different secondary school settings. Guided by the HCT and Pedagogical Ecology theoretical and conceptual frameworks, respectively, the next chapter describes methodology used to fill this literature gap.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter presents the research design, methodologies and procedures which was used for addressing the study gap to achieve the study objectives. These included instrumentation and data processing techniques, procedures for choice of study sites, sampling techniques and sample size, validity and reliability, data analysis and ethical issues.

3.2 Research design

This study employed both positivist and interpretivist paradigms to investigate the effect of educational inputs on student performance. The positivist paradigm directed the quantitative aspect, focusing on objective data such as test scores to identify statistical relationships between educational inputs and student outcomes (Asamoah, 2014; Bryman, 2008). This approach provided a clear, measurable understanding of trends and patterns (Popper, 2005). According to Ponterotto (2005), this research approach relies on the hypothetico-deductive method to test and verify hypotheses quantitatively. The researcher selected the positivist paradigm for its capacity to yield objective, observable data through tools such as questionnaire and document analysis. Conversely, the interpretivist paradigm guided the qualitative aspect of the study, involving one-on-one interviews with teachers to explore their perspectives on the educational inputs they employed and FGDs with students to capture their views and experiences (Barbie, 2008). By integrating these two paradigms, the study not only quantified the influence of educational inputs but also examined the complex, contextual factors affecting academic performance.

3.3 Research approach

The present study employed a mixed methods research design, specifically a concurrent design, which combined quantitative and qualitative approaches (Schoonenboom & Johnson, 2017). This approach involved generating and analysing both types of data separately but simultaneously, followed by integrating the findings to provide a comprehensive understanding of the research problem. The decision to adopt a mixed methods approach was justified by the understanding that combining quantitative and qualitative methods provided a more complete and nuanced understanding of the research problem (Creswell, 2009). Quantitative methods offered statistical analysis and numerical insights, while qualitative methods provided rich contextual understanding and insights into participants' perspectives and experiences (Frankel & Wallen, 2009). Integrating both approaches aimed to strengthen the study's validity and depth.

In this study, quantitative methods were used to gather numerical data on variables such as educational inputs and students' performance in secondary schools. This data was analysed using statistical techniques to identify patterns, trends, and relationships. Simultaneously, qualitative methods such as interviews and focus group discussions were conducted to explore the experiences, perceptions, and attitudes of students, teachers, and administrators regarding educational inputs and their effect on students' performance. Qualitative data was analysed using thematic analysis or other qualitative techniques to identify themes, patterns, and insights. Finally, the findings from both quantitative and qualitative analyses were integrated to provide a comprehensive understanding of the relationship between educational inputs and students' performance, thereby addressing the research questions from multiple perspectives and enhancing the overall validity and depth of the study.

3.3.1 Quantitative research

According to Bryman (2008), quantitative research entails the collection of numerical data exhibiting a view of the relationship between theory and research as deductive predilection for natural sciences approach and having an objectivist conception of reality. From the position of quantitative research, measurement, causality and generalizations are some of the main features. The study used quantitative data, employing descriptive analysis. This approach summarized and described the

educational inputs, including teacher qualifications, school facilities, and financial resources. Descriptive statistics, such as frequency distributions and percentages, were calculated to provide an extensive overview of these educational inputs across various secondary school settings. In addition, a linear regression analysis was employed to examine the relationship between educational inputs (e.g., budget allocation) and students' academic performance (measured by MSCE national examination results). Lastly, inferential analysis was also involved performing multiple regression analysis to determine the impact of endogenous and exogenous inputs on MSCE results or performance.

3.3.2 Qualitative Methods

In addition, the study incorporated qualitative methods. Qualitative studies utilize the natural setting as the primary source of data, with the researcher acting as the key instrument (Barbie, 2008). This approach allowed for a detailed exploration of how educational inputs influence outcomes in selected secondary schools across Mangochi district. The researcher directly engaged with two education officers sampled from the division education office and district education office, alongside ten form teachers and ten head teachers from various secondary schools in Mangochi district. These interactions revealed key issues addressed by the study.

3.4 Study site

The research was conducted in Mangochi district, which consists of nine clusters of secondary schools, each with a variety of school types and characteristics. Cluster sampling was employed to select ten secondary schools from these clusters. This method was chosen for its efficiency and ability to provide a representative sample that captured the diversity of the study area. The selected schools included a mix of different types, such as CDSSs, PSSs, and DCBSSs, and DCSS, along with both co-educational and girls-only institutions. This diversity facilitated a comparative analysis of how different school types impact learning outcomes.

3.5 Study Participants

The study focused on key stakeholders in secondary education within Mangochi district, including head teachers/deputy head-teachers, education officers from the district and division offices, selected secondary school teachers, and form four

graduates (2023 MSCE candidates). These participants were purposively selected based on the following criteria

- i.** The head teachers/deputy head-teachers are the leaders and managers of the secondary schools, and they have the authority and responsibility to implement educational policies and practices.
- ii.** The education officers from the district and division are the supervisors and coordinators of the secondary schools, and they have the expertise and experience to monitor and evaluate the quality of education.
- iii.** Teachers in charge for form four students (class teachers), play a pivotal role in students' education, directly influencing their learning outcomes and holistic development.
- iv.** The selected teachers, covering core subjects, directly influence students' learning outcomes.
- v.** The form four graduates are the ones who had completed the secondary education cycle and have taken the national examinations, and they have the first-hand knowledge and feedback on the quality of education they received.

The inclusion criteria for selecting the participants were as follows:

- i.** The head teachers/deputy head-teachers and the education officers must have at least three years of experience in their current positions.
- ii.** The selected secondary school teachers must have at least two years of teaching experience in their respective subjects.
- iii.** The form four students (graduates) must have attended the same secondary school for at least two years.

The exclusion criteria for selecting the participants were as follows:

- i.** The head teachers/deputy head-teachers and the education officers who are planning to retire or transfer within the next six months.
- ii.** The selected secondary school teachers who are on leave or absent for more than two weeks during the data collection period.
- iii.** The form four students (graduates) who have dropped out or repeated a grade during the secondary education cycle.

3.6 Study Period

The study commenced on May 20th, 2024, and followed a structured timeline: data collection was conducted from May 20th to June 10th, during which the necessary information was gathered. This was followed by the data transcription phase from June 11th to June 15th, where the collected data was transcribed. Data analysis was then carried out from June 16th to June 30th, involving a thorough examination and interpretation of the transcribed data. Finally, the study concluded with the finalization phase from July to Oct, during which the findings were synthesized and the overall documentation was completed.

3.7 Sampling techniques.

This study used both simple random and purposive sampling techniques. Creswell (2009) defined simple random sampling as the process of selecting a sample that is representative of the population, where each individual has an equal probability of being selected. According to Bryman (2008), simple random sampling is employed when dealing with a large sample size. Participants, including teachers and head teachers, were selected from identified schools to ensure diversity and representation within the sample. Subsequently, the simple random sampling technique was used to select the desired number of students, providing every learner with an equal chance of being included in the study sample.

On the one hand, schools, head teachers, class teachers, and two education officials were purposively sampled. According to Bryman (2008), purposive sampling is defined as a non-probability form of sampling where participants are selected based on specific characteristics or expertise relevant to the research objectives, rather than randomly. Fraenkel and Wallen (2000) also asserted that in purposive sampling, individuals chosen are not necessarily representative of the entire population but are selected because they possess crucial information or insights relevant to the study. They were chosen purposively because of their ability to provide detailed information about educational inputs. Therefore, their selection relied on judgment and expertise rather than on a random or formulaic approach.

3.8 Sample size

White (2005) and Kothari (2011) conceptualize sample size as an individual

representing the population, while McNeil and Springfield (2005) view it as a subset for inference. Therefore, from the known population of 1,760 individuals (comprising 1,510 students and 250 teachers), the desired sample size was calculated using this formula;

$$n = E^2 Z^2 \times p \times q \times N + Z^2 \times p \times q \cdot N$$

where

- n is the sample size.
- Z is the Z-score for the desired level of confidence (e.g., 1.96 for 95% confidence).
- P is the estimated proportion of the population with the characteristic of interest (e.g., 0.5 for 50%).
- q is the complement of p (e.g., 0.5 for 50%).
- E is the desired level of precision or margin of error (e.g., 0.05 for 5%).
- N is the population size (e.g., Students N1=1,510; Teachers N2 = 250).

Hence, the formula facilitates the determination of the sample size needed based on the population size, desired confidence level, proportion, and precision.

Therefore,

- $n = 0.052 \times 1.962 \times 0.5 \times 0.5 \times 1760 \approx 91.17$
- $n = 91.17 + 118.8319$
- $n = 91.17 + 138.83$
- $n = 230$

Therefore, the participant pool for this research, utilizing simple random sampling, consisted of 230 individuals, with 150 sampled from students and 80 from teachers.

Additionally, in this study, 22 participants who included the head teachers and class teachers were purposively selected. Their perspectives and experiences were integral to understanding the educational landscape within schools. By deliberately choosing individuals with first-hand knowledge and expertise relevant to the research objectives, this study aimed to gain deeper insights into specific aspects of its focus (Bryman, 2008). This targeted approach ensures that the collected data are rich, nuanced, and aligned with the research goals, ultimately enhancing the overall quality and validity of the study findings (Bryman, 2008). Table 2 summarizes the number of respondents sampled for personal interviews, FGDs, and questionnaires.

Table 2 : Sampling Techniques and Sample Sizes

Category of Participants	Sampling Techniques	Sampled number
Students	Simple Random	150
Teachers	Simple Random	80
Head teachers and class teachers	Purposive sampling	20
District Education Manager	Purposive sampling	01
Education Division Manager	Purposive sampling	01
Total sample		252

For the proportional allocation of students across ten secondary schools, given the total student population of 1,510, the distribution was accurately organized. Of the total sample of 230 participants, 150 were students (see Table 3). This proportionate allocation was designed to ensure that the sample accurately represented the student body across the schools. Allocating 150 students from the sample ensured it accurately reflected the diversity and characteristics of the larger student population.

Table 3: Sample size for the students

SN	Proportional allocation	Sample size
01	School A: $\frac{180}{1510} \times 150$	18
02	School B: $\frac{100}{1510} \times 150$	10
03	School C: $\frac{210}{1510} \times 150$	21
04	School D: $\frac{110}{1510} \times 150$	11
05	School E: $\frac{197}{1510} \times 150$	20
06	School F: $\frac{157}{1510} \times 150$	16
07	School G: $\frac{108}{1510} \times 150$	11
08	School H: $\frac{210}{1510} \times 150$	21
09	School I: $\frac{109}{1510} \times 150$	11
10	School J: $\frac{109}{1510} \times 150$	11
Total		150

Additionally, for the proportional allocation of teachers across ten secondary schools, with a total teaching staff of 250, the distribution was carefully planned. From the overall sample of 230 participants, 80 were identified as teachers (see Table 4). This

proportionate allocation ensured that the representation of teachers in the study was reflective of their actual distribution across the schools.

Table 4 : Sample size for the teachers

SN	Proportional allocation	Sample size
01	School A: $\frac{40}{250} \times 80$	13
02	School B: $\frac{33}{250} \times 80$	11
03	School C: $\frac{15}{250} \times 80$	5
04	School D: $\frac{25}{250} \times 80$	8
05	School E: $\frac{23}{250} \times 80$	7
06	School F: $\frac{18}{250} \times 80$	6
07	School G: $\frac{27}{250} \times 80$	8
08	School H: $\frac{28}{250} \times 80$	9
09	School I: $\frac{21}{250} \times 80$	7
10	School J: $\frac{20}{250} \times 80$	6
Total		80

3.9 Data collection instruments

Data collection instruments are essential tools for gathering research data. In this study, survey questionnaire and document analysis were the primary instruments, supported by in-depth interviews and FGDs. Each instrument was carefully designed to collect data relevant to the research objectives and to capture diverse perspectives on the topic. The main data sources were questionnaire and interviews (FGDs and one-on-one sessions), while other methods served as supplementary sources. Quantitative data were collected through two types of questionnaires: one for students and another for teachers. These questionnaires evaluated exogenous, endogenous, and financial inputs in secondary schools, as well as students' performance in the MSCE examinations. Qualitative data, on the other hand, were gathered through FGDs and informant interviews, providing additional insights and contextual explanations to complement the quantitative findings. This combination of methods ensured a comprehensive understanding of the research topic.

3.9.1 Survey Questionnaire

In this study, closed-ended questionnaire was employed to collect quantitative data

from respondents, focusing on actors and beneficiaries in the education system. Closed-ended questions, featuring fixed response options like yes/no or Likert scales, provided a standardized and objective means of measuring variables for easy statistical analysis. The questionnaire was tailored to address research questions, objectives, and insights from the literature review. The selected respondents, namely actors (teachers) and beneficiaries (students) in secondary schools, were pivotal in offering reliable data on education quality and influencing factors. Students, as beneficiaries of education interventions, contributed insights into learning outcomes, attitudes, and behaviors, while teachers, as actors, provided information on teaching practices, perceptions, and challenges. Aligned with representativeness principles, the sample size aimed for 75 students and 75 teachers, considering availability and accessibility factors (see Table 5).

Table 5 : Number of distributed questionnaire

Category of Participants	Sampled
Students	80
Teachers	80
Head teachers and class teachers	160

3.9.2 Interview schedule

Additionally, to complement the quantitative findings and gain a deeper understanding of the factors influencing class performance, Key Informant Interviews (KIIs) and In-Depth Interviews (IDIs) were conducted with key stakeholders such as head teachers, education officers, and class teachers. These qualitative interviews facilitated open-ended discussions, providing rich and contextual information. The study included scheduled one-on-one interviews in all ten schools, as well as two each at the district education office and division education office. An interview can be defined as a two-person conversation initiated by the interviewer, guided by a clear list of issues and questions (Kombe, 2006). Through in-depth interviews with head teachers and education officers at the district and division levels, the study gathered qualitative insights regarding the factors influencing MSCE results. Open-ended questions explored perceptions, challenges, and strategies related to educational inputs, offering nuanced perspectives and a contextual understanding of how these inputs impact MSCE results. The study conducted one-on-one interviews with a total of twenty-two participants: 10 head teachers, 10 class teachers, and 2 administrators (see Table 6).

Table 6 : KIIs and IDIs interview sample

Category of the participants	Actual
Class Teachers	10
Head teachers	10
Administrators	02
Total	22

3.9.3 Focus group discussion (FGD)

A focus group discussion (FGD) involves a group of participants, led by a facilitator, focusing on a specific topic to collectively construct meaning through interaction (Bryman, 2001). In the current study, the primary respondents were students, where each FGD comprised eight to ten individuals of both genders. Participants were randomly selected using a simple random sampling method. This approach ensured that each member sharing similar characteristics had an equal chance of being selected for inclusion in the study. FGDs enabled the researcher to gather a wealth of information efficiently. Participants could raise relevant issues, challenge each other's perspectives, and collectively interpret phenomena. In this study, each school contributed seven students to engage in FGDs and an FGD interview guide was used to structure the discussions. Thus, in total, 70 students from all participating schools took part in the FGDs.

3.9.4 Document Analysis.

Document analysis serves as a research technique where diverse documents like reports, policies, statistics, curricula, syllabi, textbooks, and examination papers are scrutinized to gather information and gain insights into the subject of investigation (Bowen, 2009; Prior, 2003). This method can enhance other means of data collection, such as interviews and surveys, by offering supplementary evidence and facilitating data triangulation (Bryman, 2008). In this study, document analysis was used to collect data on the quality of education and the factors that influenced it in the selected secondary schools. The documents that were analysed included:

1. The MSCE results, which are the official records of the students' academic performance and achievement in the national examinations.
2. The records of educational inputs distributed to the secondary schools, such as textbooks, teaching materials, equipment, and infrastructure, which indicate the

availability and adequacy of the learning resources. The records of financial inputs, such as school budget, which reflect the level and allocation of funding for the secondary education sector.

The document analysis helped the researcher validate the information collected through questionnaires by comparing and contrasting data from different sources. It also enabled the researcher to identify gaps and inconsistencies in the data, exploring their reasons and implications. The document analysis followed a systematic procedure of finding, selecting, appraising, and synthesizing data from documents, using a document analysis guide based on the research questions, objectives, and literature review. This guide specified the types, sources, and criteria of the documents analyzed, as well as the themes, categories, and indicators extracted from them. In this context, document analysis was employed to systematically examine and interpret official MANEB results, focusing on the MSCE results, aiming to uncover patterns and insights.

3.10 Data Management.

Data management is the process of planning, collecting, organizing, storing, analysing, and sharing data throughout the research project. According to Meadows and Dodendorf (1999, p.196), effective data management “facilitates interpretation just as a good orchestration facilitates good dance music”. The current study's data was securely stored in various digital formats such as spreadsheets, databases, and documents to prevent loss or corruption. Regular backups were conducted on external devices and cloud servers. Additionally, the data was documented and labelled clearly to ensure consistency and readability. It was handled in accordance with ethical and legal standards of data protection and privacy. The data was also prepared for analysis and dissemination, following the principles of open science and data sharing.

3.11 Data Analysis

The study adopted a mixed-methods approach, integrating both quantitative and qualitative data analysis techniques to answer the research questions. The quantitative data was analysed using SPSS, a versatile statistical software program that facilitated the execution of various statistical tests and the creation of visual representations of the findings. To address the research objectives, three statistical tools were selected: descriptive analysis, simple linear regression, and multiple regression (Bryman, 2016).

To answer the first research question, "What educational inputs are used in different schools?", descriptive analysis served as the primary tool. This approach summarized and described the educational inputs, including teacher qualifications, school facilities, and financial resources. Descriptive statistics, such as frequency distributions and percentages, were calculated to provide an extensive overview of these educational inputs across various secondary school settings in the Mangochi district (Creswell, 2014). The findings were also presented in a table, offering a clear representation of the distribution and frequency of inputs across schools. This method facilitated a comprehensive understanding of the availability and types of resources utilized within each school setting.

For the second research question, "What is the extent of the contribution of each educational input to students' academic performance in MSCE across different secondary school settings in Mangochi district?", a linear regression analysis was employed. This statistical method examined the relationship between educational inputs (e.g., budget allocation) and students' academic performance (measured by MSCE national examination results). The dependent variable, students' performance, was categorized into three groups based on MSCE score points. The criteria included single digits, which are eligible for university entry with high chances of enrolling in any program; double digits which are also eligible for university entry; and not eligible for university entry but still considered a pass in the examination:

- a) 6 – 9 (category 1)
- b) 10 – 36 (category 2)
- c) 37 – 46 (category 3)

Additionally, cross-tabulation of school types and performance categories was used to uncover patterns in student outcomes, helping to identify the strengths and weaknesses of different secondary school types. This analysis quantified the association between educational inputs and academic performance, providing insights into how specific factors, such as financial inputs or teacher qualifications, influenced MSCE outcomes. Scatter plot was used to provide a visual representation of the data, showing how two variables interact. For instance, a scatter plot illustrating the relationship between school budget allocations and MSCE results provided an overview of how these variables are related (Bryman, 2016).

To address the third research question, "What is the relationship between exogenous and endogenous educational inputs and students' academic performance at MSCE in different secondary school settings in Mangochi district?", a multiple regression analysis was employed. This analysis modeled the relationship between the dependent variable—students' performance in the MSCE examinations—and the independent variables, which included both exogenous inputs (e.g., funding, school infrastructure) and endogenous inputs (e.g., teacher qualifications, student-teacher ratio). Multiple regression analysis allowed for the estimation of the relative contribution of each input to students' academic performance, taking into account the simultaneous influence of other variables. This approach enabled the identification of key factors that significantly impact academic achievement, providing valuable insights for educational policy and intervention strategies aimed at improving student outcomes in the Mangochi district (Creswell, 2014).

The independent variables encompass both exogenous and endogenous factors of secondary schools, incorporating various continuous and categorical variables that reflect the quantity, quality, or level of inputs within each school. Following (Bryman, 2016) and Hadi (2012), the study employed the multiple regression model to scrutinize the relationship between these inputs and students' academic performance. The regression model helped to calculate coefficients for each input, indicating their respective effect on academic performance. Significance tests evaluated the strength of these relationships, with a p-value < 0.05 denoting significance, as suggested by (Creswell, 2014). Diagnostic checks were conducted to validate the regression model, ensuring compliance with assumptions such as linearity, homoscedasticity, and normality of residuals (Creswell, 2014). This comprehensive analysis aimed to uncover factors influencing academic outcomes, guiding educational policies and practices. Additionally, the study explored interactions among independent variables and potential non-linear or curvilinear relationships, as emphasized by Bryman (2001). The general formula of the multiple regression model for this study was $Y = \beta + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k + \epsilon$

where:

- Y was the dependent variable (school/students' performance in MSCE)
- $X_1, X_2, \dots, X_k$ were the independent variables (exogenous, endogenous, and financial inputs of the secondary schools).

- β_0 was the intercept (the expected value of Y when all X's are zero).
- $\beta_1, \beta_2, \dots, \beta_k$ were the regression coefficients (the change in Y for a unit change in X).
- ϵ was the error term or residual (the variability in Y not explained by the model)

Furthermore, graphical representations such as scatter plots and regression lines were produced to assist in the understanding of the relationship between the dependent variable and the independent variables (Bryman, 2001). Through multiple regression analysis in SPSS, the researcher aimed to gain insights into how exogenous and endogenous inputs of secondary schools impacted students' performance in the MSCE examinations.

On the other hand, qualitative data analysis involved coding, theme development, data interpretation, and contextualization (Creswell, 2014). Data triangulation was employed to validate and corroborate quantitative findings (Creswell, 2009). By integrating qualitative insights with quantitative results, the reliability and credibility of the study's conclusions were ensured. Besides, verbatim incorporation strengthened quantitative data analysis by including direct quotes from participants, capturing their voices and perspectives authentically (Patton, 2015). The integration of quantitative and qualitative data analysis methods yielded comprehensive insights into the factors influencing academic performance in secondary schools within the Mangochi district.

3.12 Ethical Considerations

Ethical considerations are essential for conducting educational research, as they ensure the respect, dignity, and wellbeing of the participants and the researchers. Ethical considerations also enhance the quality, validity, and reliability of the research findings and their implications for policy and practice. In this research, the investigator adhered to the ethical principles for educational research specified by the University of Malawi Research Ethics Committee (UNIMAREC). The researcher also followed the national and institutional regulations and standards for ethical conduct of research in Malawi. Before collecting data from the respondents of this study, the researcher submitted the research proposal to UNIMAREC for ethical approval, a committee responsible for reviewing and endorsing the ethical and scientific validity of research involving human

subjects carried out by UNIMA faculty, staff, students and their collaborators and associates.

After receiving the clearance letter from UNIMAREC, the researcher visited all relevant authorities and stakeholders before commencing data collection. These included the district and division education offices, head teachers, school management committees of selected secondary schools, and parents or guardians of students. The researcher explained the research's purpose, scope, and procedures, seeking permission and cooperation to conduct the study in their respective settings. To address non-compliance potential cases, the researcher assessed reasons behind it and resolved issues or concerns raised by participants, providing additional information, clarifications, or reassurances as needed. Adjustments to the study protocol were considered to accommodate participant needs while maintaining research integrity. Regarding the voluntary participation or withdrawals, participants were informed of their autonomy to withdraw at any time without consequences, with clear upfront information about the withdrawal process. Privacy and confidentiality were ensured throughout, safeguarding participants' personal information.

All research participants, including head teachers, teachers, students, and education officers, were fully informed and provided voluntary consent to participate. Written consent was obtained through consent forms that detailed the research title, aim, researcher's identity, data collection methods, potential risks and benefits, confidentiality assurances, and contact details for inquiries or complaints. The contents of the consent forms were explained verbally to participants to ensure understanding and address any questions or concerns. Efforts were made to respect cultural and religious values and minimize harm or discomfort to participants and their data. The collected data from participants were securely stored. Privacy was maintained through pseudonyms, codes, or numbers for identification and secure storage methods.

3.13 Reliability and validity of data collections instruments

To ensure the credibility and trustworthiness of the study, a triangulation approach was employed. Triangulation involves utilizing various data generation and analysis techniques to gain a comprehensive understanding of the phenomenon under investigation. According to Cohen et al. (2007) and Fraenkel Wallen (2000), this

method enables researchers to gather multiple perspectives on the same topic, enhancing the reliability and validity of the findings. In this study, four distinct data collection methods were utilized for each research objective: document analysis, focus group discussions, questionnaires, and personal interviews. Additionally, data were collected from various sources such as the District Education Manager, Education Division Manager, head teachers, and class teachers. This comprehensive approach aimed to mitigate limitations associated with single data collection methods and minimize individual bias, thereby fostering confidence in the study's findings.

3.14 Chapter Summary

This chapter provided an overview of the research design, methodology, and approaches employed in the study. It outlined the sample size, sampling techniques, data collection instruments, and analytical procedures. Additionally, it discussed the selection of data collection tools and provided rationale for their choice.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

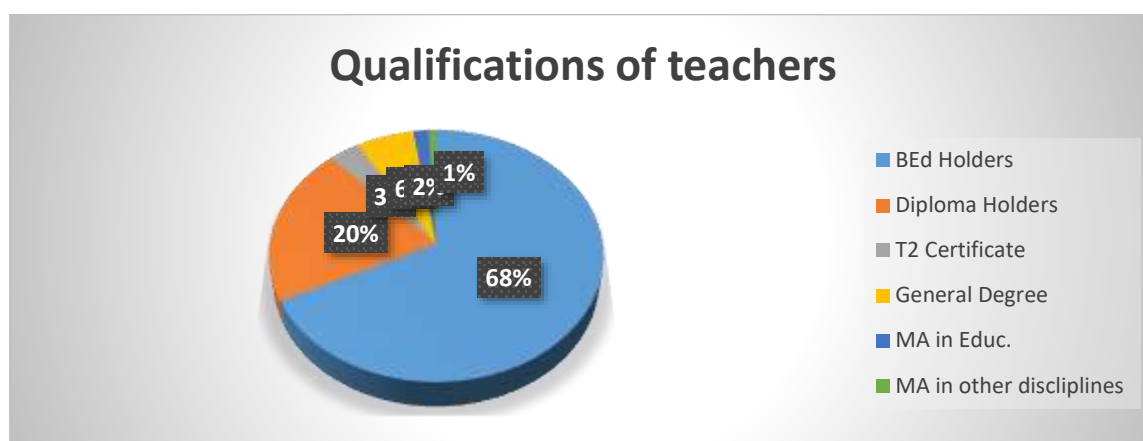
This chapter presents and discusses the study findings. The integration of quantitative and qualitative findings provides a comprehensive understanding of the interplay between educational inputs and students' academic performance. Triangulation of data sources enhances the validity and reliability of the study, offering a nuanced portrayal of factors influencing educational outcomes in various secondary school settings. Therefore, this chapter analyses and discusses the tabulated findings, underscoring the need for targeted interventions to improve educational quality and equity across different school types.

4.2 Socio-demographic Characteristics of Respondents

This study engaged a diverse group of key stakeholders in secondary education across Mangochi district. The participants included 10 educational leaders: 4 deputy head teachers and 6 head teachers. In addition, 85 teachers from various disciplines and experience levels offered perspectives on pedagogical challenges and professional development needs. The student cohort comprised 155 MSCE graduates from the 2023 class, reflecting a diverse group in both gender and academic backgrounds. Additionally, two male participants from district and division education offices, provided critical perspectives on policy implementation and resource allocation in educational governance and management. Table 7 provides a summary of the participants involved in this study, including head teachers, deputy head teachers, teachers, 2023 MSCE graduates, as well as division and district officers.

Table 7: Demographic Distribution of Participants by Role and Age Group

Variable	Deputy Head-Teachers n (%)	Head Teachers n (%)	Teachers n (%)	MSCE 2023 class n(%)	District/Division Education Officers n (%)	Overall n (%)
Gender						
Male	4(100%)	4(66.7%)	45(52.9%)	70 (45.2%)	2 (100%)	125(49.6%)
Female	0 (0%)	2 (33.3%)	40 (47.1%)	85 (54.8%)	0 (0%)	127(50.4%)
Age						
17-26	0 (0%)	0 (0%)	0 (0%)	155 (100%)	0 (0%)	135(61.5%)
27-36	0 (0%)	0 (0%)	50(58.8%)	0 (0%)	0 (0%)	50(19.8%)
37+	4 (100%)	6 (100%)	35 (41.2%)	0 (0%)	2 (100%)	47(18.7%)

**Figure 6: Distribution of qualifications of teachers**

The pie chart above illustrates the distribution of qualifications among teachers across the sampled schools and two education officials at the district and division offices. The vast majority of teachers hold Bachelor of Education (BEd) degrees, comprising 68% of the total. Diploma holders make up 20%, while those with T2 Certificates and General Degrees account for 3% and 6%, respectively.

4.3 Utilization of Educational Inputs

The first objective of the study was to determine the level of utilization of educational inputs across various secondary schools in Mangochi district. Table 8 presents quantitative data illustrating the distribution and availability of various educational inputs.

Table 8: Status of Educational Inputs in Different Secondary Schools of Mangochi district

Input	CDSS n (%)	Private Sec. Sch. n (%)	National Sec. Sch n (%)	District Conv. SS n (%)	Day SS. n (%)	Overall n (%)
Availability of Prescribed Textbooks						
▪ Enough	1(33.3%)	2(66.6%)	1(100%)	2 (100%)	1(100%)	7(63.6%)
▪ Not Enough	2(66.6%)	1(33.3%)	0	0	0	3(27.2%)
Student-Teacher Ratio						
▪ Adequate	1(33.3%)	3(100%)	1(100%)	2 (100%)	1(100%)	8(72.7%)
▪ Inadequate	2(66.6%)	0	0	0	0	2(18.2%)
Financial Resources						
▪ <25m MWK	2(66.6%)	0	0	0	1(100%)	3(27.2%)
▪ ≥25m MWK	1(33.3%)	3 (100%)	1(100%)	2 (100%)	0	7(63.6%)
Availability of Laboratories						
▪ Improvised	3 (100%)	0	0	1(50%)	1(100%)	5(45.5%)
▪ Well-constructed	0	3(100%)	1(100%)	1(50%)	0	5(45.5%)
Availability of Lab Apparatus						
▪ Enough	0	3(100%)	1(100%)	2 (100%)	1(100%)	7(63.6%)
▪ Not Enough	3(100%)	0	0	0	0	3(27.2%)
Availability of Library						
▪ Improvised	3(100%)	0	0	1(50%)	0	36(.4%)
▪ Well-constructed	0	3(100%)	1(100%)	1(50%)	1(100%)	54.5%)
Availability of boarding facilities						
▪ Without	3(100%)	1(33.3%)	0	0	1(100%)	5(45.5%)
▪ With	0	2 (66.6%)	1(100%)	2 (100%)	0	5(45.5%)
Quality of Classrooms						
▪ Poor	2 (66.6%)	0	0	0	0	2(18.2%)
▪ Good condition	1(33.3%)	3(100%)	1(100%)	2 (100%)	1(100%)	8(72.7%)
Teaching experience						
• < 5 years	2 (66.6%)	3(100%)	0	2(66.6%)	2 (66.6%)	9 (75%)
• ≥ 10 years	1(33.3%)	0	3(100%)	1(33.3%)	1(33.3%)	6 (25%)
Teaching workload						
< 20 periods per week	1(33.3%)	1(33.3%)	3(100%)	2 (66.6%)	2 (66.6%)	9 (60%)
≥ 20 periods per week	2(66.6%)	2(66.6%)	0	1(33.3%)	1(33.3%)	6 (40%)
Qualifications of Teachers						
1. B. Ed	8(49.12%)	42(58.3%)	4(91.89%)	50(73.53%)	14(87.50%)	168(66.6%)
2. General Degrees	4 (7.02%)	14(19.4%)	1(2.70%)	0	0	19(7.5%)
3. Diploma	6(28.07%)	15(20.8%)	2(5.41%)	6(23.53%)	1(6.25%)	50(19.8%)
4. T2 Certificate	8 (14.04%)	0	0	0	0	8(3.2%)
5. Master's degree	1 (1.75%)	1 (1.39%)	0	2(2.94%)	0	4(1.6%)

Availability of Prescribed Textbooks

According to Table 8, the analysis revealed significant differences in textbook availability. In CDSS, only 33.33% of schools had enough textbooks, while 66.67% lacked sufficient resources. In contrast, PSSs reported 66.67% having adequate textbooks. NSS, DCBSSs, and DCSS all reported 100% availability of textbooks. This discrepancy indicates that students in CDSS may face challenges due to limited access to textbooks, which could negatively impact their learning and performance compared to peers in NSS, PSSs, and DCBSSs. A deputy head teacher from a NSS highlighted the benefits of ample textbooks, stating,

"Our students have no issue accessing textbooks; every student has their own, which greatly enhances their ability to study independently and excel in exams." Similarly, a teacher from a DCBSS remarked, *"With enough textbooks, we can assign more homework, knowing that every student has the resources to complete it effectively."* In contrast, one of the CDSS head teachers noted, *"The shortage of textbooks is a major issue. Students often have to share, which limits their study time and disadvantages them compared to better-resourced schools."* Students in a FGDs expressed frustration, saying, *"We struggle because we don't have enough textbooks."*

These issues align with Maonga, Chirwa, and Nyoni (2024), who identified inadequate facilities and insufficient resources as barriers to quality education.

Student-Teacher Ratio

The student-teacher ratio was reported as adequate in 33.33% of CDSS, 100% of PSSs, and 100% of NSS, DCBSSs, and DCSS (see Table 8). This signifies that schools with adequate ratios are better positioned to provide individualized attention, which can enhance learning outcomes. This is because smaller class sizes allow teachers to focus on each student's unique needs, provide timely feedback, and create a more engaging and interactive learning environment. Furthermore, researchers agree that an adequate ratio helps in managing classroom discipline effectively, ensuring a conducive environment for learning (Osei et al, 2020 and Maonga, Chirwa, and Nyoni, 2024). The high proportion of adequate ratios in PSSs, NSS, and DCSSs may contribute to better academic performance compared to CDSS, where inadequate ratios could result in larger class sizes and reduced teaching effectiveness. It was noted that schools with higher teacher-to-student ratios may face challenges in providing personalized

instruction and maintaining classroom discipline, potentially impacting students' academic performance. This was supported by the sentiments of one of the form teachers who commented,

"With more teachers, we can reduce class sizes and give more attention to each student." One of the head teachers also said, "Adequate staffing is essential for effective teaching and classroom management." An administrator at the Division Education Office added, "In CDSSs, teacher retention is a major issue due to a lack of essential resources like housing and water, leading to a high student-teacher ratio and poor academic performance."

These findings were also noted by Osei et al. (2020), who found that inadequate teaching staff negatively affects teaching and learning, leading to poor academic performance.

Financial Resources

Regarding financial resources, Table 8 shows that 66.67% of CDSS had less than MWK 25 million, while 33.33% had more. The figure of MWK 25 million was used as a financial benchmark to distinguish schools with relatively limited resources from those with stronger financial support, based on observed funding patterns and the financial requirements necessary to sustain quality education. PSSs and NSSs both had 100% with $\geq$ MWK 25 million, indicating stronger financial backing. DCBSSs and DCSS were split between these two categories, with district conventional schools generally having better funding than day secondary school. Schools with higher financial resources are likely to have better facilities, teaching materials, and support services. The limited financial resources in CDSS, where 66.67% operate below the benchmark, could hinder their ability to deliver quality education compared to schools with better funding. This trend underscores a systemic issue, as CDSSs often located in rural areas face significant challenges in maintaining educational standards due to persistent funding constraints. One head teacher noted,

"The school has not received government funding in three years and relies solely on the School Development Fund (SDF) for expenses, which leads to financial instability affecting essential teaching aids and materials". Another head teacher added, "Without ORT funds, we struggle to cover basic costs, let alone invest in educational improvements." Teachers also highlighted, "Insufficient funding

hampers our ability to deliver effective lessons, impacting students' understanding and performance."

These findings support Maonga, Chirwa, and Nyoni (2024), who found that providing quality education necessitates substantial financial support for acquiring essential teaching and learning resources. Similarly, MacJessie-Mbewe and Mwambucha (2015) argue that despite policy changes wherein the government has assumed greater responsibility for financing CDSSs to create a unified public secondary system, many CDSSs continue to experience significant resource shortages and are staffed by underqualified teachers.

Availability of Laboratories

CDSS predominantly had improvised laboratories, with 100% of schools in this category lacking well-constructed labs. However, according to Table 8, private secondary schools, national secondary schools, district conventional secondary schools, and day secondary schools all reported 100% well-constructed laboratories. Well-constructed laboratories are crucial for providing practical experiences, which can significantly enhance students' scientific and technical learning outcomes. The absence of proper laboratories in CDSS may limit students' hands-on learning experiences compared to those in schools with better lab facilities. It was noted that schools with well-equipped labs tend to provide hands-on learning opportunities that enhance students' engagement and mastery of scientific principles, whereas those lacking proper facilities may struggle to deliver effective science education. As one of the head teachers argued, *"Schools with better labs see more interest and higher performance in science subjects."* These findings align with Vizyalona, Chirwa, and Nyoni (2024), who found that inadequate or absent laboratory facilities can impede practical learning experiences crucial for grasping scientific concepts and achieving better academic performance in science subjects.

Availability of Lab Apparatus

In CDSS, 100% of schools reported inadequate lab apparatus (see Table 8). In contrast, private secondary schools, national secondary schools, district conventional secondary schools, and day secondary schools all reported 100% availability of lab apparatus. Adequate lab apparatus is essential for effective science education, and the lack of such resources in CDSS could hinder students' understanding and skills development in

science subjects compared to their counterparts in better-resourced schools. A teacher in one of the CDSSs commented,

"Our students miss out on crucial practical experiments because we lack the necessary lab equipment." In a focus group discussion, students echoed this concern, stating, "We find it hard to grasp scientific concepts without hands-on experiments due to the lack of lab apparatus." Conversely, a teacher from a private secondary school observed, "With fully stocked laboratories, our students can engage in more comprehensive practical work, which significantly enhances their understanding." Similarly, a participant from a NSS noted, "Having adequate lab apparatus allows us to conduct effective experiments, helping students develop essential scientific skills and achieve better academic results."

The current study's findings are supported by Banda and Simpemba (2019), who found that insufficient quantities of lab apparatus in mobile laboratories hindered practical science lessons. Their research highlights similar challenges in CDSS, where inadequate resources also adversely impact students' science education.

Availability of Library

Whilst library facilities in CDSS were entirely improvised (100%), with no well-constructed libraries, Table 8 demonstrates that private secondary schools and national secondary schools had 100% well-constructed libraries. DCBSSs had an equal split between improvised and well-constructed libraries (50% each), while day secondary schools had 100% well-constructed libraries. Access to well-constructed libraries supports students' research capabilities and reading habits, potentially improving academic performance. All the head-teachers agreed that such inadequacies can hinder students' ability to engage in independent learning and academic research, potentially impacting their overall academic performance. Clark (2001) emphasizes that well-resourced libraries play a vital role in supporting students' independent learning and academic research. An administrator in the Division Education Office commented,

"Enhancing library resources should be a priority to support students' academic growth." "In contrast, inadequate library facilities can limit students' educational opportunities, affecting their ability to excel academically and engage in self-directed learning activities". In addition, one of the teachers also expressed her

concern, *"Our library lacks up-to-date books, which limits the students' ability to research and learn independently."*

Availability of Boarding Facilities

The availability of boarding facilities varied considerably (see Table 8). CDSS had no boarding facilities (100% without). In private secondary schools, however, 66.67% had boarding facilities. NSS and DCSSs both reported 100% availability of boarding facilities, while day secondary schools had none. Boarding facilities can provide a stable environment that supports academic and social development. The absence of boarding facilities in CDSS might affect students' overall educational experience compared to those in schools with such provisions. During the FGDs, most students shared,

"Ensuring equitable access to boarding facilities is crucial for supporting students' holistic development and fostering positive learning outcomes across diverse socioeconomic backgrounds." This was also attested by some form teachers who noted, "Students from distant areas often face difficulties attending school regularly without boarding facilities." Head teachers echoed this sentiment, stating, "Boarding facilities help create a stable environment conducive to learning."

In a separate research, Nkhoma and Chimombo (2018) found that boarding facilities play a crucial role in providing a stable and conducive learning environment. Their study highlights how these facilities enhance academic focus and promote consistent student attendance.

Quality of Classrooms

In CDSS, 66.67% of classrooms were reported as poor, while 33.33% were in good condition. Private secondary schools, day secondary schools, and district conventional secondary schools had all classrooms in good condition (100%), as did national secondary schools. The quality of classroom infrastructure influences the learning environment. Well-maintained classrooms in private and national secondary schools likely offer a more conducive learning atmosphere compared to the poor conditions observed in some CDSS. This was reflected during the interviews as one of the form teachers remarked,

"The state of our classrooms directly affects how well students can concentrate and participate in lessons." Some head teachers also argued that, *"Well-maintained classrooms create a more inviting and effective learning environment."* The same sentiment was shared by one of the District Education Officers, *"Investing in classroom infrastructure is essential for improving overall educational quality."*

These findings are in line with Chikondi and Chilimampunga (2017), who found that high-quality classrooms are crucial for fostering a conducive learning environment that promotes student engagement and academic success.

Teaching experience

According to Table 8, 75% of teachers have less than 5 years of experience, with 66.6% in CDSS, 100% in PSSs, and 66.6% in district conventional secondary schools. The high percentage of less-experienced teachers in CDSS and private schools can be attributed to the instability caused by low or unattractive salary packages, as one head teacher from a private school noted: *"Due to poor or not attractive salary packages, teachers are not stable, too mobile, we lose teachers."* The high turnover rate in these schools contributes to understaffing, further impacting the quality of teaching. In contrast, 100% of teachers in NSS have over 10 years of experience. This stability is largely due to better facilities and teacher retention, as highlighted by one deputy head teacher: *"NSSs have better facilities, so teachers stay longer and more experienced teachers are posting there."* This finding aligns with Chikondi and Chilimampunga (2017), who found that teacher retention and experience play a significant role in improving teaching quality and academic outcomes.

Teaching workload

Regarding teaching workload, in CDSS, 33.3% of teachers handle fewer than 20 periods per week, while 66.6% of teachers have a workload of 20 or more periods per week. One administrator at the Division Education Office mentioned, *"In CDSSs, many teachers run from villages, creating a problem of understaffing, which leads to a high workload for the teachers."* This imbalance results in teachers having to manage larger classes and handle more periods, which can negatively impact teaching effectiveness. In private secondary schools, 33.3% of teachers handle fewer than 20 periods per week,

while 66.6% have more than 20 periods per week. A teacher in a private school pointed out, *“Due to poor or unattractive salary packages, teachers are not stable. They are too mobile, and we lose teachers often, which creates pressure on those remaining.”* This high turnover leads to an increased workload for the teachers, who are forced to cover more periods due to staffing shortages. In DCSSs, 66.6% of teachers have fewer than 20 periods per week, while 33.3% handle more than 20 periods per week.

However, this workload is still manageable in comparison to CDSS and private secondary schools. In contrast, in NSS, all teachers handle fewer than 20 periods per week, indicating a lighter workload compared to the other types of schools. This could be attributed to better teacher retention and more manageable class sizes. One head teacher commented, *“The workload in NSSs is more balanced, allowing teachers to manage their time effectively and focus on providing quality education.”* This finding aligns with UNICEF (2019), who emphasized that teacher workload significantly impacts their ability to deliver effective instruction, with high workloads often leading to lower quality teaching and poor student performance.

Qualifications of Teachers

Teacher qualifications across secondary schools exhibit considerable variation, according to Table 8. In CDSS, 49.12% of teachers hold a B. Ed degree, while 28.07% have diplomas, and 7.02% possess general degrees. However, only few teachers have T2 certificates (14.04%) and master’s degrees (1.75%). In contrast, private secondary schools report 58.33% of teachers with B. Ed degrees and 19.4% with general degrees. National secondary schools have the highest percentage of teachers with B. Ed degrees at 91.89%, with very few holding general degrees (2.70%) or diplomas (5.41%). DCBSSs show 73.53% of teachers with B. Ed degrees and 23.53% with diplomas. DCSS has 87.50% with B. Ed degrees and 6.25% with diplomas, with no teachers holding general degrees or T2 certificates. The higher proportion of B.Ed degrees in NSS, DCBSSs, and PSSs suggests better training compared to CDSS, likely leading to higher educational quality. Schools with well-qualified staff are better at implementing effective teaching strategies and adapting curricula, thereby promoting academic excellence. As most form teachers said,

“Teachers with higher qualifications bring more effective teaching methods into the classroom.” Head teachers also attested, *“Investing in professional development for our teachers*

is crucial for maintaining high educational standards." An education administrator in the division education office shared, "Encouraging teachers to pursue advanced degrees can lead to significant improvements in student learning outcomes."

These findings align with UNICEF (2019), who found that teachers' qualifications are crucial, as insufficiently qualified teachers can result in poor academic performance among students.

Summary of Educational Inputs across Secondary Schools

The analysis of educational inputs across the sampled secondary schools in Mangochi reveals significant disparities in both resources and infrastructure. While 63.6% of schools report having sufficient textbooks, and 72.7% have an adequate student-teacher ratio, many schools continue to experience shortages in these crucial areas. Financial resources are similarly uneven, with 63.6% of schools operating with budgets of at least 25 million MWK, while others struggle with far less. Laboratory and library facilities also show marked differences, as only 45.5% of schools have well-constructed laboratories and 54.5% possess well-equipped libraries, leaving the remainder to rely on makeshift solutions.

Furthermore, 54.5% of schools have boarding facilities, suggesting that nearly half face challenges in accommodating students from distant locations. Classroom quality is good in 72.7% of schools, but 27.3% are in need of improvements. In terms of teacher qualifications, 66.6% hold a Bachelor of Education degree, but only 1.8% have advanced to a Master's degree. While some schools are adequately equipped to develop human capital in alignment with HCT, others continue to lack the essential resources, financial support, and infrastructure required to do so. This uneven distribution of educational inputs hampers equal access to quality education, which is vital for cultivating a well-educated and productive population essential for national development. These findings align with the observations made by MoEST and UNESCO (2008, p. 19) in their report, *The National Development of Education in Malawi*. The report highlights that,

"the lack of adequate classrooms, science-teaching facilities, and libraries, particularly in CDSSs, severely affects the quality of education." "It further emphasizes that the overall condition of classrooms and science teaching and learning facilities where they

exist, fails to create an environment conducive to effective teaching and learning''.

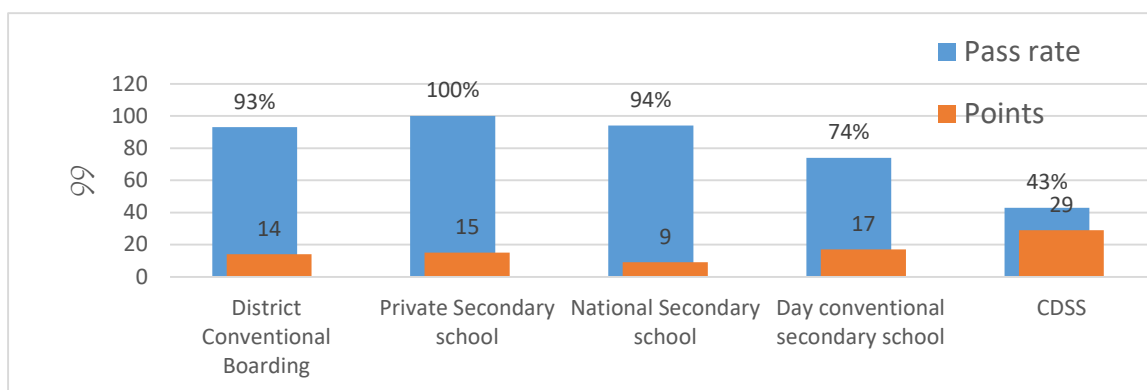


Figure 7: Performance Comparison of Secondary School Types in Mangochi (Field work, 2024)

The figure 7 above, compares the pass rates and the highest MSCE points scorer across five types of secondary schools in Malawi: DCBSS, PSS, NSS, DCSS, and CDSS. PSSs lead with a 100% pass rate and 15 points, followed by National Secondary Schools with a 94% pass rate and 9 points, which is the highest score. DCBSSs show a 93% pass rate with 14 points, while DCSS record a 74% pass rate with 17 points. CDSS performs the poorest, with a 43% pass rate and 29 points, highlighting significant disparities in performance among the school types.

4.4 Effect of Educational Inputs on Students' Performance

The second objective of this study was to evaluate the impact of each educational inputs on students' performance in different secondary schools in Mangochi district. This was done by categorizing students' academic performance in the MSCE examinations into three groups based on their score points, as illustrated in Table 9 and Figure 8.

Table 9: Distribution of Students by Performance Category

Performance category	Points range	Frequency
Category 1	6 – 9 points	2
Category 2	10 – 36 points	63
Category 3	37 – 46 points	24
Total		89

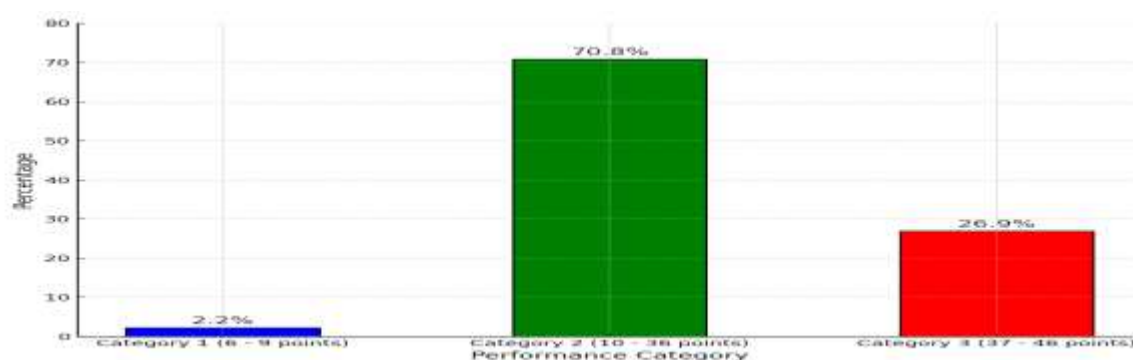


Figure 8: Distribution of Students by Performance Category

The data showed that the highest performance category (6 – 9 points) had the smallest number of students (2.2 %), suggesting that only a few students achieved the highest scores. This might have implied that a small fraction of students excelled exceptionally well, possibly due to varying levels of support, teaching quality, or student engagement. The majority of students (70.8%) performed in the intermediate range (10 – 36 points). This indicated that most students achieved average to slightly above-average scores, reflecting a generally satisfactory but not outstanding level of performance. The number of students in the lowest range (37 – 46 points, 26.9%) pointed to a need for targeted support and interventions. It highlighted that nearly a quarter of the students did not perform as well as their peers, suggesting areas for improvement in teaching strategies or the need for additional resources to support these students.

Relationship between School Types and Academic Performance

According to Table 10, the cross-tabulation of school types and performance categories describes the proportional relationship between academic performance and school types, thereby revealing the strengths and weaknesses of each school type.

Table 10: Distribution of Students by Performance Category and School Type

Performance Category	CDSS n (%)	District Conventional Boarding Sec. School n (%)	National Sec. School n (%)	Day Conventi onal Sec. School n (%)	Private Sec. School n (%)
Category 1 (6 – 9 points)	0(0%)	0(0%)	2(16.6%)	0(0%)	0(0%)
Category 2 (10 – 36 points)	11(47.8%)	16(88.8%)	10(83.3%)	2(20%)	27(93.1%)
Category 3 (37 – 46 points)	12(52.1%)	2(22.2%)	0(0%)	8(80%)	2(6.8%)

Top Performers (Category 1)

According to Table 10, NSS perform well in the top category, with 16.6% of their students achieving 6–9 points (Category 1). Their success in reaching the highest performance bracket highlights their strong educational programs, resources, and support systems. Unlike other school types, which do not have any students in Category 1, NSS demonstrates excellence in fostering top academic performance. A deputy head teacher from a NSS stated,

“Our school excels in academic performance, thanks to our teachers who are listed as MANEB examination markers and chief examiners. Their expertise significantly enhances our educational standards.” A Form Four teacher remarked, *“The professional development of our teachers plays a crucial role in our students’ success. The dedication to improving their skills translates into exceptional performance among our students.”* In a FGD, students expressed, *“Our school stands out due to the excellent resources and support we receive, which greatly contributes to our high level of academic achievement compared to other schools.”*

These findings are in line with Mwalupindi and Zgambo's (2017) research, which emphasizes that National Secondary Schools in Malawi achieve high performance due to their well-qualified teachers, abundant resources, and robust support systems.

Middle Performers (Category 2)

PSSs and DCBSSs both have a significant proportion of students in the middle performance category, with PSSs having 93.1% and DCBSSs having 88.8% of their students in Category 2 (10–36 points, see table 10). The finding indicates that PSSs and DCBSSs have a high percentage of their students performing well in the (10–36 points) category. This suggests that while these schools may not have as many students in the top performance category, they are successful in ensuring that a substantial majority of their students achieve a middle range of performance, reflecting effective but not top-tier educational outcomes. A head teacher from a Private Secondary School explained,

"The key to our success lies in our tailored instructional methods and consistent monitoring of student progress. We focus on targeted interventions and personalized support to ensure that the majority of our students perform well." Similarly, a head teacher from a DCBSS shared, *"Our strong performance is due to our structured boarding environment,*

which allows for extended study hours and close supervision. We invest in regular training for our teachers to maintain effective teaching practices." During FGDs in both schools, students revealed, *"Our success comes from the extra support we receive from our teachers and the structured environment of our school, which helps us stay focused and improve steadily."*

These findings are in line with Chimombo (2018), who emphasized that individualized instruction, effective resource allocation, and well-qualified teachers contribute to the strong performance observed in PSSs and DCBSSs.

Lowest Performers (Category 3)

CDSS, Day Conventional Secondary Schools, and some PSSs show varying levels of performance in the lowest category, Category 3 (37–46 points, see table 10). Notably, CDSS and Day CSSs have high percentages in this bracket, with Day CSSs having 80% of their students in Category 3. This indicates significant challenges in achieving higher performance levels. CDSS also reflects a considerable portion of students in Category 3, suggesting difficulties related to resources, teaching practices, or other factors affecting student outcomes. One head teacher noted,

"Our limited budget means we often have to choose between essential supplies like textbooks and maintaining our facilities. As a result, students are not receiving the comprehensive education they deserve."

This highlights how insufficient funding constrains the ability to provide necessary educational materials, ultimately affecting student learning. In FGDs, teachers echoed similar sentiments, stating, *"With overcrowded classrooms and inadequate resources, it's difficult to implement effective teaching practices. Many of us feel we're just trying to keep up rather than providing the quality education our students need."* This statement underscores how resource limitations can lead to less effective teaching methods, which in turn impacts student outcomes.

Furthermore, a head teacher expressed concern about the lack of support for professional development, saying, *"Without access to training and development programs, teachers struggle to adapt to new teaching strategies, which directly affects how our students perform."* These findings are consistent with the research conducted by Maonga, Chirwa, and Nyoni (2024), who identified several challenges within CDSSs that adversely impact academic performance. Their study highlighted issues

such as limited resources, insufficient teacher support, inadequate infrastructure, high student-teacher ratios, and ineffective teaching practices.

Overall, the analysis highlights significant disparities in educational performance across various school types in Mangochi. NSS leads in Category 1, with 16.6% of students achieving 6–9 points, largely due to access to highly qualified teachers, some of whom are MANEB examiners, as well as abundant resources and strong support systems. These inputs are directly aligned with HCT, which posits that investment in quality education, such as providing skilled teachers and sufficient resources, is crucial for developing human capital. In contrast, PSSs and DCBSSs perform moderately well in Category 2, with 93.1% and 88.8% of students, respectively, scoring between 10 and 36 points.

However, limited access to highly qualified teachers and insufficient resources restrict the capacity of these students to fully develop their potential, thus hindering the broader development of human capital. Meanwhile, CDSS and DCSS struggle, with up to 80% of students falling into Category 3 (37–46 points), due to inadequate resources and limited professional development for teachers. This lack of educational inputs reinforces the disparity in human capital development across these schools. Addressing these disparities through targeted investments in teacher training, resource allocation, and infrastructure improvements is essential for enhancing the capacity of students to contribute meaningfully to society and the economy. By focusing on these key inputs, educational systems can foster more equitable human capital development, ultimately contributing to sustainable economic growth and social advancement.

Effect of Financial Inputs on Academic Performance

Additionally, a regression analysis was performed to thoroughly assess the relationship between financial resources and student performance. This analysis aimed to determine how varying levels of financial input influence students' academic outcomes, providing a deeper understanding of the connection between financial investment in education and the resulting performance in the MSCE examinations.

The regression equation used in this analysis can be represented as follows:

$$Y = \beta_0 + \beta_1 X + \epsilon$$

Where:

- Y represents the students' academic performance.
- X represents the financial inputs
- β_0 is the intercept.
- β_1 is the coefficient representing the impact of financial resources on performance.
- ε is the error term.

This equation illustrates how changes in financial resources (X) are associated with variations in academic performance (Y).

Table 11 : 2023 School Budget Allocation and Its Effect on MSCE Pass Rate

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	57.808	6.985		8.276	<.001	41.700	73.917		
	2023 financial allocations	6.964E-8	=.000	.781	3.533	.008	.000	.000	1.000	1.000
a. Dependent Variable: 2023 MSCE Pass Rate in %										

According to Table 11, the effect of financial input on educational performance illustrates the relationship between the 2023 school financial allocation and the MSCE pass rate. The constant term in the analysis, with a value of 57.808 and a p-value of less than .001, indicates that if school budget expenditure were zero, the average MSCE pass rate would be about 57.808%. This figure provides a baseline for assessing the effect of budget expenditures on pass rates. This is the case with CDSSs, one head teacher highlighted how the significant funding disparity directly affects their school's performance. He explained,

"Despite proposing an ORT budget of MWK 19 million, we received only MWK 1,008,000, primarily for electricity costs, hence poor results on MSCE." On the other hand, the FGDs reported that *"this severe underfunding means that essential resources such as textbooks, laboratory equipment, and other educational inputs are either insufficient or unavailable, leading*

to an inadequate learning environment. As a result, students are not adequately prepared for critical examinations like the MSCE, which directly impacts their academic performance''.

The lack of funding also limits the school's ability to improve infrastructure and support teacher development, further contributing to the poor results. This case underscores the critical role of adequate financial resources in providing a quality education that leads to better academic outcomes. The unstandardized coefficient 6.964E-8 for the 2023 school financial allocation suggests that for each additional MWK expenditure recorded on the school budget, academic performance significantly decreases (p-value 0.008) by approximately 0.000006964 percentage points in the MSCE pass rate. For instance, one of the head teachers commented that

“if these CDSS students are given an opportunity of exchanging with their friends in national secondary schools, take the form one selection list and allow them to go to either district boarding schools or national secondary schools, where funding is much better they might pass well their MSCE’’.

This finding aligns well with research by Vizyalona, Chirwa, and Nyoni (2024) who reported that substantial financial investment is essential for acquiring the necessary teaching and learning resources, key to ensuring quality education. In summary, the results emphasize the essential role of adequate financial resources in improving educational outcomes. For example, division education officer commented,

"Increased funding allows schools to procure essential learning materials, which directly impacts student performance." The district education officer echoed this, noting, "Schools with better financial resources tend to perform better because they can support both teachers and students more effectively."

During FGDs in all ten schools, students and teachers consistently highlighted the importance of adequate funding in providing necessary resources and improving educational outcomes. Interviews with form four teachers and deputy head teachers also emphasized the role of sufficient budget allocations in attracting qualified teachers and maintaining a conducive learning environment, both of which are critical for enhancing student achievement. These findings also align with Mackenzie (2014) who conducted his study on public school funding and outcomes in Delaware in USA revealed a

significant positive relationship between overall per-pupil funding and average NAEP scores. He further reveals that \$1000 increase in per-pupil funding yielded a 9.28-point increase in combined SAT 1 scores.

The scatterplot (Figure 9) shows that higher 2023 school budget expenditures are linked to higher 2023 MSCE pass rates for 10 schools in Mangochi district, with data points clustering in the upper right. Outliers indicate variability due to unique school contexts, and the dispersion around the trend line highlights other factors influencing educational outcomes beyond just financial inputs. This implies that schools with well-managed funding, who allocate their resources wisely and prioritize key areas that directly impact student performance, tend to achieve higher pass rates, not simply because they have sufficient budget allocations.

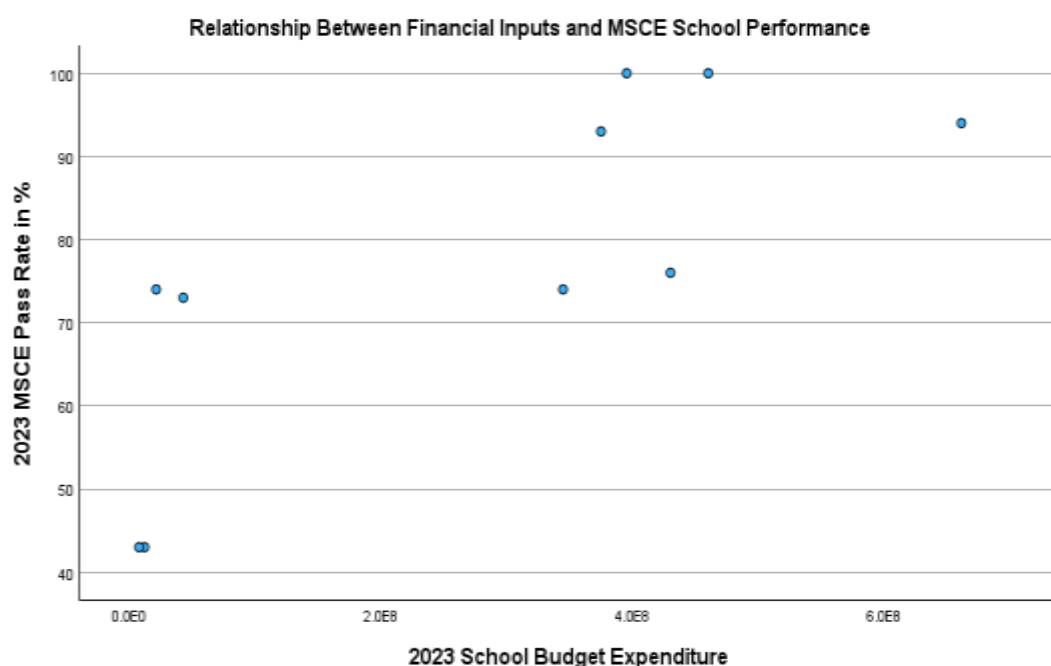


Figure 9: Scatterplot shows the relationship between financial inputs and school

Overall, the findings of this study align with HCT, which posits that investment in education enhances productivity and outcomes. The analysis shows that without budget expenditure, the MSCE pass rate would be 57.808%, highlighting the influence of financial inputs on academic performance. Schools with limited funding, especially CDSSs, struggle to provide essential resources like textbooks and teacher development, leading to poor student outcomes. In contrast, better-funded schools achieve higher pass rates due to improved access to learning materials and infrastructure. This reinforces HCT's assertion that educational investment boosts student productivity. However, the

study also reveals inefficiencies in some schools, indicating that financial inputs alone are insufficient without effective resource management, suggesting that while HCT provides a strong framework, proper resource allocation is equally critical for maximizing educational outcomes.

4.5 Effect of Endogenous and Exogenous Inputs on Academic Performance

The final objective was to analyse the effect of internal and external factors on students' academic performance at the MSCE level across various secondary schools in Mangochi district. Understanding the factors that influence academic performance is crucial for developing effective educational policies and interventions. Using multiple regression analysis, the study aimed to identify and quantify the effects of different inputs. Academic performance was assessed by the number of points scored in the 2023 MSCE examinations.

The regression model can be represented by the following formula: $Y = \beta + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k + \epsilon$

where:

- Y is the dependent variable (school/students' performance in MSCE)
- $X_1, X_2, \dots, X_k$ are the independent variables (exogenous, endogenous, and financial inputs of the secondary schools).
- β_0 is the intercept (the expected value of Y when all S X S are zero).
- $\beta_1, \beta_2, \dots, \beta_k$ are the regression coefficients (the change in Y for a unit change in X).
- ϵ is the error term or residual (the variability in Y not explained by the model).

In thi analysis,

- a) Predictors (explanatory variables) are: School location, Type of school, Accommodation kind, Distance to school, Parental hood status, Number of siblings, Parental level of education, Guardian occupation, Energy source for home/school, Quality of classrooms, Quality of science laboratories, Quality of library, Quality of computer lab, Quality of overall school environment, Quality of school amenities, Availability of prescribed books, Availability of lab apparatus, Teacher qualification, Type of degree, Teaching experience, and Teaching workload.

- b) Outcomes (dependent variable) is: Points scored in 2023 (6 – 9 (category 1); 10 – 36 (category 2), 37 – 46 (category 3) where the results are presented in Table 12.

Table 12 : Regression Analysis Coefficients

1	Model	Unstandardized Coefficients		Standardized Coefficients	t value	Sig.	95.0% Confidence		Collinearity Statistics
		B	Std. Error	Beta			Lower Bound	Upper Bound	
	(Constant)	46.818	10.390		4.506	<.001	-6.227	-0.100	
	School location	-.176	3.034	-0.176	-.058	<.001	-2.481	-0.100	1.000
	Type of school	-.690	.898	-0.690	-.769	0.001	0.100	5.600	.989
	Boarding facility	1.771	1.399	0.887	-.456	< 0.001	-1.493	-0.785	.987
	Distance to school	1.175	.998	-1.175	1.178	0.05	0.100	.2.920	.927
	Parental hood status	.139	1.395	0.139	.100	0.001	0.100	1.663	.956
	Number of siblings	.581	.542	0.581	1.072	< 0.001	0.100	1.143	.916
	Parental level of Education	-1.893	.520	0.142	-3.638	<.001	-4.697	-0.100	.923
	Guardian occupation	.192	.477	. 0.192	.402	<.001	-2.958	-0.100	.956
	Energy source for home/school	-1.901	1.402	-1.901	-1.357	< 0.001	0.100	.1.664	.356
	Quality of classrooms	-1.006	.979	-1.006	-1.028	< 0.001	0.100	.3.517	.372
	Quality of science laboratories	.398	.635	0.008	.627	0.05	0.100	2.100	.588
	Quality of library	1.192	1.165	1.192	1.023	< 0.001	-0.100	-5.300	.728
	Quality of computer lab	.923	.590	0.923	1.564	< 0.001	0.100.	2.100	.347
	Quality of overall school environment	.055	1.255	0.055	.044	1.012	0.100	2.557	.370
	Quality school amenities	-2.074	1.617	2.074	-1.282	< .001	0.100	1.663	.482
	Available of prescribed books	.443	1.480	0.443	.299	<0.001	0.100	3.395	.527
	Availability of lab apparatus	.017	1.141	-1.705	.015	<0.001	-2.958	-0.100	0.100
	Teacher qualification	5.000	1.500	0.500	3.333	<.001	2.000	-0.100	.916
	Type of degree	-3.000	1.000	-0.300	-3.000	0.004	-5.000	-0.100	.923
	Teaching experience	2.500	0.500	0.250	5.000	<0.001	1.500	-0.100	.956
	Teaching workload	-4.000	1.000	-0.400	-4.000	<.001	-6.00	-0.100	.989

Effects of external factors and physical facilities on academic performance

As indicated in the multiple regression data, Table 12, school location has a slight but significant negative effect on the points scored ($B = -0.176$, $p < 0.001$). This suggests that students in certain school locations may face challenges that negatively impact their

academic performance. Factors such as accessibility to school, the socio-economic environment, and availability of resources can play a crucial role. In accordance with this, numerous researchers have contended that school location can adversely affect academic performance, resulting in lower standardized test scores, restricted access to educational resources, and higher dropout rates, especially in disadvantaged areas. As one teacher lamented, *“due to the lack of positive role models, we have had many dropouts here in rural areas.”* It was noted that in some schools, learners, especially in rural areas, lack parental support, supervision, and are often disrupted by rites of passage and other customs. In addition, this issue was evident in numerous focus group discussions, particularly those involving schools situated in rural settings. One participant remarked, *“we lack adequate teaching resources and positive role models because our schools are located in inaccessible areas”*. This underscores the persistent challenges confronting students in rural areas, highlighting the various factors contributing to academic difficulties and high dropout rates. These findings are in line with Akyeampong et al. (2018) who found that schools located in inaccessible areas often lack adequate teaching resources and positive role models.

Additionally, school location significantly affects academic performance. For instance, rural areas, where most CDSSs are situated, encounter more challenges compared to district conventional boarding secondary schools and private secondary schools, leading to poorer educational outcomes. This observation was confirmed by several head teachers, form teachers, one of the district education officials, and division officer. They highlighted key difficulties faced by CDSSs in contrast to other school types:

“The environments where many of these schools are located lack support and have minimal parental involvement. Teaching staff often lack sufficient qualifications for secondary education. Housing for teachers is inadequate, and school infrastructure is deficient. There are few incentives to attract teachers to rural areas, and transportation challenges, such as teachers commuting long distances by bicycle, which is very challenging during the rainy season, further exacerbate performance issues in some CDSSs.”

Furthermore, the results of the regression analysis ($B = -0.690$, $p = 0.001$, see Table 12) offer quantitative insights into the strength and significance of the relationship between

school type and academic performance. These findings indicate notable differences among national secondary schools, private schools, district conventional boarding schools, and CDSSs, underscoring disparities in educational resources, teaching quality, and learning environments. Zamasiya (2017) discusses the specific challenges faced by CDSSs, including issues with infrastructure, teacher qualifications, and resource availability compared to other secondary school types. According to a district education officer, "NSSs, DCSSs, and other PSSs generally enjoy better access to resources and facilities compared to their rural counterparts, influencing student performance positively." In addition, during the FGDs, the students highlighted that national secondary schools, district boarding schools, and private secondary schools with boarding facilities demonstrate superior academic advantages. This sentiment was echoed in interviews with the Division Education Administrator, who emphasized the critical role of school type in academic performance, stating,

"Rural CDSSs cannot be equated with national secondary schools, well-equipped private secondary schools, and district conventional boarding schools due to their comprehensive resources, human capital, and operational advantages."

On the other hand, he highlighted that, some CDSSs, particularly those located in urban areas, perform significantly better and are able to compete with national secondary schools. These findings are in line with Banda (2019) who found that National secondary schools typically offer higher quality education compared to CDSSs, as demonstrated by metrics such as exam performance, teacher-student ratios, and facility conditions.

According to Table 12, the regression analysis also indicates a significant positive effect of boarding facilities on academic performance ($B = 1.771$, $p < 0.001$), particularly for students attending National secondary schools, district boarding schools, and private boarding schools. This suggests that students who have access to boarding facilities, such as those in well-equipped hostels with conducive study environments, tend to achieve higher academic scores compared to day scholars. The coefficient ($B = 1.771$) signifies that for every unit improvement in boarding facilities, academic performance increases by approximately 1.771 points, holding other factors constant. This finding underscores the crucial role of boarding facilities in supporting academic success,

especially for students in boarding schools. One participant from the division education office argued that,

“boarding facilities provide an environment that minimizes distractions and enhances study routines, which are essential for maintaining focus and academic progress”. “In contrast, day scholars may face challenges such as longer commuting times and fewer opportunities for structured study environments outside school hours.”

These findings align with Mphande (2020), who found that conducive learning environments, such as boarding facilities, positively impact student academic achievement in national examinations.

As regards to distance, the analysis indicates a significant negative impact of distance from school on student academic performance ($B = -1.175$, $p < 0.5$, see Table 12), suggesting that increased distance correlates with decreased academic scores. Through focus group discussions (FGDs) in all schools with students and one-on-one personal interviews with form teachers, identified several contributing factors such as travel fatigue, time constraints, and reduced availability for studying and participating in extracurricular activities. As one participant shared, *"Distance from school significantly affects our performance. Students who live farther away tend to get fatigued from commuting, leaving less time for studying and extracurricular activities."* These findings align with other research findings, emphasizing the critical role of school proximity in student outcomes. Kadzamira and Rose (2003) highlight that longer distances are linked to higher dropout rates and poorer academic achievement among Malawian students. Similarly, Baliyan and Khama (2020) found that students living closer to school tend to perform better academically due to reduced fatigue and more study time. The study underscores the challenges faced by students attending community day secondary schools, many of whom commute from distant locations. In contrast, students in boarding schools, including conventional and private institutions with boarding facilities, often encounter fewer obstacles.

On the parental hood status, the regression analysis of Table 12 reveals that parental hood status has a small but significant positive effect on points scored ($B = 0.139$, $p = 0.001$), indicating that students with supportive parental involvement, such as those with both parents alive, tend to perform better academically. The coefficient ($B = 0.139$)

suggests that for every unit increase in parental support, academic performance increases by approximately 0.139 points, holding other factors constant. Conversely, students with orphan hood status experience varying impacts on their educational outcomes. One of the head teachers during the interviews commented that,

“those receiving support from both parents may benefit from a stable home environment conducive to studying hence better academic performance”.

This is in line with Chimombo (2018), who found that parental involvement positively influences academic success.

On the number of siblings, the regression analysis reveals a significant negative effect of the number of siblings on points scored ($B = 0.581$, $p < 0.001$, see Table 12), indicating that students with more siblings tend to perform poorly academically. This outcome may stem from increased competition for resources within the family and potentially reduced individual attention from parents or guardians, impacting academic engagement and achievement. These findings are consistent with the sentiments expressed during focus group discussions, where participants noted that delays in parents' school fee payments exacerbate these challenges. One of the participants commented, *“delays in fee payment can disrupt students' education, leading to exclusion from classes or exams, which further contributes to academic underperformance”*. This aligns with the findings of Kamwaza (2019), Chirwa (2018), and Mphande (2020), who all identified the negative effects of parental status on educational outcomes. Their research highlights how issues like parental absence or instability can adversely impact students' academic performance.

On the level of parents' education, the regression analysis shows that a parent's level of education is linked to the academic performance of students ($B = 1.893$, $p < 0.001$, see Table 12). This suggests that parents with high education levels may intentionally create high expectations for their children. These expectations often stem from the parents' own academic achievements and their desire for their children to succeed similarly. These findings align with a number of scholars who have observed similar trends in parental influence on academic outcomes. For instance, Mwale (2022) found that parental education correlates positively with academic achievement among secondary school students in Malawi. Chirwa (2020) highlighted how educated parents tend to set

ambitious goals for their children, impacting their academic motivation. These findings are consistent with Banda (2019), who found that parental expectations based on higher education levels can sometimes create increased pressure on students, impacting their academic performance.

On the guardian occupation, based on the analysis of Table 12, it has a small but significant positive effect on points scored ($B = 0.192$, $p = 0.013$). This suggests that the nature of a guardian's occupation can influence the academic performance of students, possibly due to economic stability and support. According to focus group discussions with students, *"having a guardian with a stable job means we have more access to study materials and a quiet place to study."* Guardians with stable and well-paying jobs might provide better educational resources and a more conducive learning environment. In interviews, some head teachers also noted that *"students with guardians in stable occupations tend to be more focused and participate actively in class."* This suggests that economic factors play a crucial role in shaping students' academic outcomes. These findings are consistent with research by some scholars who have explored similar themes. These findings align with Banda (2021), who found that guardians in stable occupations are more likely to effectively support their children's education. Additionally, Mwale (2019) obtained a positive correlation between economic stability among guardians and improved academic outcomes in secondary schools.

On energy sources, the regression analysis of Table 12 reveals that energy sources for home and school significantly affect points scored ($B = 1.901$, $p < 0.001$). This suggests that reliable energy sources play a critical role in students' study environments by influencing the availability of lighting and power for study sessions and educational technology. During the focus group discussions in all sampled schools, participants commented that students lacking proper energy sources may struggle to study effectively, particularly during evening hours. One of the division education officers also commented that, *"students in households with unreliable electricity or schools without electricity often face challenges completing homework or studying after sunset"*. According to other studies in the literature, investing in infrastructure to ensure consistent electricity or alternative energy sources, such as solar power, could enhance educational outcomes by providing a stable and reliable environment for studying (Banda, 2020). These findings are consistent with Mwalupindi and Zgambo (2017),

who found that many CDSS students study from home and some lack access to electricity, which may hinder their academic performance.

As regards to quality of classrooms, the regression analysis shows that the quality of classrooms has a significant negative effect on points scored ($B = -1.006$, $p < 0.001$, see Table 12 above). This suggest that poor classroom quality significantly hampers student performance. Some schools highlighted several factors contributing to this negative impact such as; inadequate lighting in classrooms strains students' eyes and makes it difficult to read and write, poor ventilation leads to an uncomfortable learning environment, affecting concentration and overall health, uncomfortable seating causes physical discomfort, distracting students from their studies, overcrowding can limit individual attention from teachers and create a noisy and chaotic environment that disrupts learning. During focus group discussions, students expressed similar concerns about their learning environments especially in CDSSs, stating that,

"poor lighting, an uncomfortable learning environment due poor quality of classrooms and stuffy classrooms make it hard to focus."
Similarly, form teachers highlighted that *"overcrowded and poorly maintained classrooms often result in lower student engagement and participation."*

It can be concluded that schools with poor-quality classrooms, as is often the case with many CDSSs, have a negative impact on academic performance. These findings align with research by Maonga, Chirwa and Nyonu (2024), who found that quality learning environments are crucial for promoting student achievement.

On the quality of laboratories, the regression analysis indicates that it has a small but significant positive effect on points scored ($B = 0.398$, $p = 0.05$, see Table 12). This finding suggests that better laboratory facilities with enough apparatus contribute positively to academic performance. One of the head teachers emphasized during a one-on-one interview that well-equipped and properly maintained laboratories provide students with the opportunity for hands-on learning experiences, which are crucial for understanding scientific concepts and fostering critical thinking skills. He explained that,

"inadequate laboratory resources can hinder practical learning, making it difficult for students to grasp complex scientific ideas. For example, students without access to proper lab equipment may struggle to perform experiments, leading to gaps in their

understanding and lower academic achievement, a common issue in many rural CDSSs."

In addition, during the FGDs, students frequently emphasized the importance of having access to quality laboratory facilities. One student remarked, *"when we have good labs, we can do experiments ourselves, which helps us understand better."* This sentiment was echoed by teachers, with one noting, Schools with well-maintained labs tend to see higher student engagement and better performance in science subjects. These findings align with scholars, such as Banda (2020), who found that schools with better laboratory facilities reported higher science test scores. The division education officer lamented,

"These schools lack science laboratories, sufficient apparatus for science subjects, and often do not have qualified teachers for these subjects, leading to poorer performance compared to other school types."

This highlights the significant resource and staffing challenges faced by CDSSs, which hinder students' ability to perform well in science subjects. Such being the case, quantitative results with qualitative insights and relevant literature, providing a comprehensive view of the impact of laboratory quality on academic performance. Similarly, Maonga, Chirwa and Nyoni (2024) found that well-resourced laboratories are positively correlated with improved student outcomes in secondary education. However, this benefit is not observed in CDSSs.

As for the library, the regression analysis (see Table 12) indicates that the quality of the library significantly affects points scored ($B = 1.192$, $p < 0.001$), suggesting that a well-resourced library positively impacts student performance. This relationship highlights the critical role libraries play in providing students with access to essential learning materials. The education official at the division education office raised a common concern:

"the positive effect of library quality on academic performance underscores the importance of investing in library resources. However, the critical issue lies in the disparity between urban and rural schools in terms of library facilities. Many rural schools in Malawi, particularly Community Day Secondary Schools (CDSSs), often lack basic library resources, which exacerbates the educational divide."

This was in agreement with most schools sampled in rural areas. As one form teacher noted during interviews, *"Our library is barely functional. We have outdated books, and students struggle to find relevant materials for their studies."* In focus group discussions, some students emphasized the need for guidance in utilizing library resources effectively: *"We have a library, but we don't know how to use it properly to help us with our studies."* These findings are supported by Mwalupindi and Zgambo (2017), who found that well-resourced libraries play a critical role in enhancing academic outcomes. This evidence suggests that systemic improvements in library resources could significantly elevate educational standards.

As regards to computer lab, the regression analysis (see table 12 above) reveals a significant positive impact of well-equipped computer labs on student academic performance ($B = 0.923$, $p < 0.001$). This suggests that access to modern computer facilities is crucial for enhancing learning, particularly in digital literacy and technology-related subjects. Students emphasized in FGDs that having access to such labs supports their studies, including those taking computer studies in their MSCE examinations. However, the study highlights a stark contrast between urban and rural schools. While district conventional schools, private secondary schools, and national secondary schools typically have adequate computer resources, rural schools often lack basic facilities especially CDSSs. An education division official noted during interviews,

"Students in rural areas expressed frustration over their limited access to technology, which they feel puts them at a disadvantage compared to their urban counterparts. This disparity limits rural students' exposure to digital learning opportunities," a sentiment echoed by school administrators and students alike.

The findings align with what Maonga, Chirwa and Nyoni (2024) founded in their study that most CDSSs in rural areas do not access to modern computer facilities which is crucial for enhancing learning, particularly in digital literacy and technology-related subjects.

On the overall school environment, Table 12 of the regression analysis indicates that the quality of the overall school environment has a small but significant positive effect on points scored ($B = 0.055$, $p = 1.012$). This suggests that a positive school environment, though contributing a modest increase, is crucial for academic

performance. The positive standardized Beta value underscores the importance of a supportive and well-maintained school setting in enhancing student outcomes. It was noted that a positive overall school environment encompasses a safe, inclusive, and supportive atmosphere, along with well-maintained physical facilities. For example, one student mentioned during focus group discussions, *"When the school environment is welcoming and safe, it makes it easier to focus on studies and perform well."* Similarly, teachers in interviews emphasized the impact of a positive environment on teaching effectiveness. One teacher noted, *"A supportive school culture and well-maintained facilities make it easier for us to teach and for students to learn."* Research supports the notion that a positive school environment contributes to better academic performance. These findings are also consistent with those of Ndambo et al. (2021), who found that a welcoming and safe school environment significantly enhances students' ability to concentrate on their studies and perform well.

On school amenities, the regression analysis reveals that quality school amenities significantly impact points scored ($B = -2.074$, $p < .001$, see table 12 above). Amenities such as sports facilities, toilets, and changing rooms for girls, extracurricular resources, clean drinking water and cafeterias are crucial for enhancing learning experiences. These facilities provide students with opportunities to engage in physical activities, relax, and develop social skills, contributing to their overall well-being and academic performance. Findings from focus group discussions (FGDs) with students highlight their appreciation for these amenities in enhancing their school experience. Additionally, one of the district education officers emphasized the importance of a holistic approach to learning, underscoring how well-maintained amenities contribute to creating a conducive environment for students to thrive academically and socially. In line with these findings, Chimombo (2018) also found that well-equipped schools with adequate quality amenities contribute significantly to both academic success and students' overall development and well-being

Overall, the findings affirm that educational inputs play a significant role in academic success across schools, particularly regarding MSCE results. This aligns with Human Capital Theory's premise that investing in human capital is vital for enhancing individual productivity. The analysis identifies key factors such as school location, availability of boarding facilities, teacher qualifications, and parental involvement that are directly linked to students' performance in the MSCE examinations. Improved

educational inputs lead to better academic outcomes, highlighting the necessity for targeted investments in education to ensure that all schools can achieve high performance. Emphasizing these educational inputs is essential for fostering sustainable growth and enhancing the overall educational landscape in Malawi.

Effect on the availability of prescribed textbooks on academic performance.

As it is seen on the regression analysis of Table 12, access to adequate prescribed textbooks at school significantly influences points scored ($B = 0.443$, $p < 0.001$), this regression analysis highlights the crucial role of textbook availability in shaping students' academic performance through enhanced comprehension and knowledge retention. Insights from FGDs underscored the students' perspectives on textbook access for exam preparation, with one student emphasizing, "*Having textbooks that cover all the topics helps us understand better and perform well in exams.*" Similarly, personal interviews with teachers emphasized that textbooks provide a structured approach to teaching, ensuring students receive comprehensive content vital for their academic success. This aligns with findings by other local researchers who emphasize that effective textbook utilization not only facilitates knowledge acquisition but also fosters self-directed learning and critical thinking skills development. However, in most rural CDSSs, there is a significant challenge with textbook availability, particularly for subjects like English and humanities. This limitation underscores disparities in educational resources between urban and rural schools. These findings align with Chirwa (2019) and Chinsinga (2017) who found that access to comprehensive textbooks positively correlates with student engagement and academic achievement in Malawi.

Effect of teacher characteristics on academic performance.

On teachers' qualifications, the regression analysis (see Table 12) indicates that teachers' qualifications have a significant positive effect on academic performance ($B = 5.000$, $p < 0.001$). This finding suggests that for each unit increase in teachers' qualifications, there is a corresponding 5-point increase in student scores on average. The standardized Beta value of 0.500 indicates a moderate effect size, highlighting that teachers' qualifications moderately predict academic performance. One teacher noted during interviews, "*Higher qualifications allow us to employ more effective teaching strategies that engage students and enhance their learning.*" It was noted that teachers with higher qualifications often bring enhanced skills that directly benefit students.

Ghafoor (2019) found that schools with teachers holding advanced qualifications reported significantly better student achievement outcomes compared to those with less qualified teachers. However, this ideal is not consistently met in some CDSSs, where teachers may hold PT 2 certificates or theology diplomas as their highest qualifications. These qualifications may not align with the specific pedagogical and subject matter expertise needed for secondary education.

According to Table 12, the type of degree was found to have a significant negative impact on scores ($B = -3.000$, $p = 0.004$), where each unit increase in this variable decreases scores by 3 points. However, the negative standardized Beta value of -0.300 suggests a moderate effect size. This suggests that certain types of diplomas, such as theology diplomas or PT 2 certificates, may not adequately prepare teachers for the specific challenges of the classroom. For instance, teachers with diplomas from less rigorous programs might lack the practical teaching skills or subject knowledge necessary to effectively instruct students, leading to lower student performance. During interviews with teachers, one teacher expressed concerns about the impact of their diploma on teaching effectiveness, stating that

"teachers with PT 2 certificate didn't cover all aspects of teaching they encounter in the classroom. It's challenging to meet the curriculum requirements and ensure all students understand the material."

These findings are in line with Baliyan and Khama (2020), who found that in some rural schools, teachers with low education qualifications from less accredited institutions struggled to cover the curriculum comprehensively.

As for the years of teaching service, the regression analysis of Table 12 reveals that years of experience have a significant positive effect on student scores ($B = 2.500$, $p < 0.001$). Each additional year of teaching experience corresponds to an increase of 2.5 points in student scores on average. The standardized Beta value of 0.250 suggests a moderate positive effect size, indicating that teacher experience moderately predicts student academic performance. During focus group discussions (FGDs), students expressed the positive impact of experienced teachers on their learning. One student noted, *"Our experienced teachers know how to explain difficult concepts in a way that makes sense to us"*. Similarly, in interviews, an experienced teacher shared,

"Experience has taught me how to manage my classroom more effectively and deal with challenges that come up during lessons." Additionally, the head teacher's remarks further emphasize the advantage of experienced staff: *"Our school has more experienced teachers. We have a number of assistant MANEB Chief Examiners who bring their expertise into the classroom, ensuring our students are well-prepared for their examinations."*

In line with these findings, Banda and Simpemba (2019) found that the presence of experienced teachers positively influences student achievement.

As regards with work periods of teachers, Table 12 indicates that work periods have a significant negative effect on scores ($B = -4.000$, $p < 0.001$), with each additional unit in work periods leading to a decrease of 4 points in student scores. The standardized Beta value of -0.400 suggests a moderate to strong negative effect size. This suggest that increased work periods could relate to teacher burnout, extended working hours, or larger class sizes, all of which negatively impact teaching quality and student learning. During FGDs, students expressed concerns about teacher workload affecting their learning experience. One student remarked,

"Teachers seem tired and less focused when they have too much work to handle. It affects how well they teach us." Similarly, in interviews with teachers, one teacher mentioned, *"Managing multiple classes and preparing for each can be overwhelming. It's difficult to give each student the attention they need."* The division education officer also commented that, *"in most Community Day Secondary Schools, there are fewer teachers available, making high workloads inevitable". "This situation exacerbates the challenges teachers face in delivering quality education."*

These findings are in line with Banda and Lunguzi (2019) who found that teachers who managed heavy workloads and long hours were less effective in providing personalized attention to students, resulting in lower overall student performance.

Furthermore, directional measures using Eta values were obtained to understand the relationship between school type and MSCE points scored by the students. The results are presented in Table 13.

Table 13: Directional Measures

			Value
Nominal by Interval	Eta	School Type Dependent	.617
		2023 MSCE Points Dependent	.742

According to Table 13, the results show that the Eta value for school type as the dependent variable is 0.617, while the Eta value for 2023 MSCE points as the dependent variable is 0.742. These measures provide insight into the strength and direction of the association between the type of school attended and the students' MSCE performance. The Eta value of 0.617 indicates a moderate association between school type and the distribution of MSCE points. This suggests that the differences in school types, such as CDSS, NSSs, District Conventional Boarding Secondary Schools, PSSs, and DCSSs, influence the distribution of MSCE scores among students. In other words, the type of school attended by students has a notable impact on their performance in the MSCE exams, though it is not the sole determining factor. 2023 MSCE Points Dependent ($\eta = 0.742$): The Eta value of 0.742 indicates a strong association between the type of school and students' MSCE performance. This higher Eta value suggests that variations in MSCE scores are significantly influenced by the type of school attended. The stronger association implies that the quality of education, resources available, and support systems in different types of schools play a critical role in students' academic outcomes.

Overall, these findings highlight the critical need for strategic investments in educational resources and teacher development to enhance academic performance in schools. The results demonstrate a significant positive relationship between access to adequate textbooks and student scores, underscoring the vital role that educational resources play in promoting knowledge acquisition and retention. Moreover, the positive effect of teachers' qualifications on academic performance aligns with the HCT, which posits that higher education levels improve teaching effectiveness. On the other hand, these findings also underscore the importance of considering school type as a critical factor impacting students' academic outcomes. The data suggest that different types of schools may provide varying levels of educational resources, teaching quality,

and support systems, which in turn affect students' preparation and performance in national examinations such as the MSCE.

However, these findings do not align with those of Jacobus (2010), who posited that the selection of students for secondary schools is largely determined by their performance in the primary school leaving certificate of education (PSLCE). Jacobus explained that students who achieve high scores on the PSLCE are typically selected to attend DCBSSs or NSSs, which are often perceived as more prestigious institutions offering greater academic opportunities. In contrast, students with average or lower PSLCE scores are typically assigned to CDSSs, which generally have fewer resources and may face different challenges compared to DCBSSs or NSSs. This selection process, Jacobus argued, establishes a clear performance cutoff and serves as a foundational factor that influences students' subsequent academic performance, particularly in their MSCE exams. Jacobus suggested that the type of secondary school a student attends, as determined by their PSLCE results, plays a significant role in shaping their educational outcomes and ultimately impacts their performance at the MSCE level.

4.6 Chapter summary

The chapter has provided a comprehensive analysis, detailed findings, and in-depth discussions addressing the three primary objectives of this study. Firstly, it has explored the correlation between financial inputs, such as funding and resource allocation, and academic performance, offering insights into how financial investment affects student outcomes. Secondly, it has examined the impact of various educational inputs, including teacher qualifications, teaching materials, and school infrastructure, on academic performance across different types of schools, highlighting the significance of these factors in enhancing students' learning experiences and results. Lastly, it investigated the impact of external factors, such as parental involvement, socio-economic status, and community support, on academic performance across different types of schools in the Mangochi district.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the key findings from the study, discusses the conclusions drawn from these findings, explores the implications for educational practice, and provides recommendations for future action. The study aimed to assess the impact of various educational inputs on varying academic performance in the MSCE within Mangochi district, utilizing a mixed-methods approach that combined both quantitative and qualitative data analysis techniques.

5.2 Summary of Key Findings

The level of utilization of Educational Inputs

The first objective of the study was to determine the level of utilization of educational inputs across various secondary schools in Mangochi District. The findings reveal notable variations in the availability and utilization of these inputs among different types of schools. The study employed descriptive analysis and it provided a detailed overview of educational inputs and key findings were include;

Textbook Availability: NSS, DCBSSs, and CDSSs reported having sufficient textbooks, with 100% of these schools indicating an adequate supply. In contrast, CDSS and PSSs had mixed results. While 66.6% of CDSS reported insufficient textbooks, PSSs had 66.6% with adequate resources and 33.3% with insufficient ones.

Student-Teacher Ratio: CDSS had a higher proportion of schools (66.6%) reporting an inadequate ratio compared to Private, National, and District Conventional Secondary Schools, where 100% of these schools indicated an adequate ratio. Day Secondary Schools also reported an adequate student-teacher ratio.

Financial Resources: The study used linear regression to evaluate how financial resources influence student performance. There was a notable variation in financial

resources among schools. For CDSS, 66.6% had financial resources below MWK 25 million, whereas the remaining 33.3% had resources of MWK 25 million or more. This disparity underscores the significant role that adequate funding plays in determining educational outcomes, with schools having more resources generally showing better performance.

Conversely, PSSs, NSS and DCBSSs predominantly reported having MWK 25 million or more in financial resources, with DSSs having resources below MWK 25 million

Laboratories: The availability of laboratories differed among schools. CDSS primarily had improvised laboratories (100%), while PSS and NSS reported having well-constructed laboratories (100%). DCBSSs were split, with 50% having well-constructed and 50% having improvised laboratories. DSSs also had improvised laboratories (100%).

Laboratory Apparatus: The availability of laboratory apparatus was consistent across all school types, with 100% of schools reporting sufficient apparatus.

Library Facilities: CDSS had improvised library facilities (100%), whereas PSS and NSS had well-constructed libraries (100%). DCBSSs had an equal split between improvised and well-constructed libraries, while DSS had well-constructed libraries (100%).

Boarding Facilities: Boarding facilities were present in PSS, NSS, and DCBSSs, with 66.6% of Private and 100% of DCBSSs offering boarding options. In contrast, CDSS and DCSS reported a lack of boarding facilities.

Classroom Quality: CDSS had 66.6% of schools with poor-quality classrooms, while PSS, NSS, DCDSSs and DCSS all reported having classrooms in good condition (100%).

Teacher Qualifications: Teacher qualifications showed considerable variation. CDSS had a diverse mix of qualifications, with 49.12% holding a B.Ed and 28.07% holding a diploma, T2 certificates 14.04%, PSSs had 58.3% with a B.Ed and 19.4% with general degrees. NSS had a high proportion (91.89%) with a B.Ed, while DCBSSs had 73.53% with a B.Ed. DCSS had the highest percentage of B. Ed holders (87.50%).

Evaluation of the effect of educational inputs on students' performance

The second objective of the study was to evaluate the effect of educational inputs on students' performance in various secondary schools in Mangochi District. The study categorized students' MSCE scores into three performance groups: 6–9 points, 10–36 points, and 37–46 points, revealing several critical insights about the relationship between educational inputs and student performance.

CDSS: No students were in the highest performance category, and a substantial 52.1% were in the lowest category. This suggests that CDSS may face considerable challenges affecting student performance, such as inadequate resources or support structures.

DCBSSs: Showed a more balanced performance distribution, with 88.8% of students in the intermediate category and only 22.2% in the lowest category. This indicates that boarding schools might offer better support and resources compared to CDSS.

NSS: Had 16.6% of students in the highest performance category and none in the lowest category, suggesting that these schools have more effective educational inputs and practices.

PSSs: Demonstrated relatively high performance, with 93.1% of students in the intermediate category and only 6.8% in the lowest category. This indicates that private schools may benefit from superior educational inputs, though no students reached the highest performance category.

Regression Analysis: The regression analysis revealed a significant positive effect of educational inputs on the 2023 MSCE pass rate, with an unstandardized coefficient of 57.808 ($p < .001$). This finding underscores that better educational resources and adequate funding are strongly associated with improved student performance. Schools with sufficient resources and funding, such as NSS and PSSs, generally achieved better performance. In contrast, CDSS and DCSS, which had lower performance outcomes, may need increased funding and enhanced resources to improve academic results.

Analysing the relationship between endogenous and exogenous inputs

The third objective of the study was to analyse the relationship between endogenous and exogenous inputs and students' academic performance in the MSCE examinations. Using multiple regression analysis, the study explored how various factors affect student outcomes across secondary schools in Mangochi District.

School Location: The analysis revealed that the location of schools had a significant impact on student performance, with a negative coefficient of -0.176 ($p < 0.001$). This suggests that schools situated in less accessible areas face challenges that adversely affect students' academic achievements.

Type of School: The type of school also significantly influenced performance, with a coefficient of -0.690 ($p = 0.001$). This indicates that different types of schools (district conventional, national, or private) provide varying levels of support, which impacts students' academic results differently.

Boarding Facilities: The presence of boarding facilities was identified as a crucial positive factor, with a coefficient of 1.771 ($p < 0.001$). This highlights the benefits of boarding environments, which offer students a stable and focused setting conducive to improved academic performance.

Distance to School: The distance students travel to school had a negative impact on performance, with a coefficient of -1.175 ($p = 0.05$). Longer distances can lead to increased fatigue or logistical issues, which may hinder academic success.

Parental Factors: The status of parental hood had a positive coefficient of 0.139 ($p = 0.001$), indicating that supportive family circumstances contribute to better student outcomes. However, the level of parental education showed a negative coefficient of -1.893 ($p < 0.001$), suggesting that while higher parental education is generally beneficial, its direct impact on student performance is influenced by additional factors.

Resource Quality: The quality of classrooms had a significant negative effect, with a coefficient of -1.006 ($p < 0.001$), highlighting that inadequate classroom conditions can impede academic performance. In contrast, the quality of libraries and computer labs positively affected performance, with coefficients of 1.192 ($p < 0.001$) and 0.923 ($p < 0.001$), respectively. This underscores the importance of well-resourced educational environments in supporting student learning.

Teacher Factors: Teacher qualifications and experience positively impacted student performance, with coefficients of 5.000 ($p < 0.001$) and 2.500 ($p < 0.001$), respectively. These findings emphasize the critical role of well-qualified and experienced teachers. However, teaching workload had a significant negative effect, with a coefficient of -

4.000 ($p < 0.001$), suggesting that excessive workloads may detract from effective teaching.

Availability of Resources: The availability of prescribed books positively influenced performance, with a coefficient of 0.443 ($p < 0.001$). In contrast, the availability of lab apparatus had a minor negative effect, with a coefficient of -1.705 ($p < 0.001$). These results reflect the complex relationship between different types of resources and their impact on academic performance.

5.3 Conclusions

In general, the study concludes that:

There are clear disparities in the availability and quality of educational inputs among different types of secondary schools. Schools with better access to textbooks, financial resources, and well-maintained facilities generally provide a more conducive learning environment and achieve higher academic performance.

In addition, performance varies significantly across school types, with CDSS facing more challenges compared to NSS and PSSs. The presence of boarding facilities and higher-quality resources are associated with better student outcomes.

Factors such as school location, type, distance, and parental support are crucial in determining student performance. Teacher qualifications and experience have a positive impact, while excessive workloads can detract from effective teaching.

5.4 Implications

The study's findings carry several important implications for educational policy and practice. One key area is policy and funding, where disparities in educational inputs underscore the need for more equitable distribution of resources. Schools like CDSS and DCSSs, which often face significant resource limitations, require increased funding to enhance their infrastructure, resources, and overall educational environment. Addressing these disparities will create more balanced opportunities for students across different types of schools.

School management also plays a critical role in improving educational outcomes. Effective management of resources is necessary to prioritize the upgrading of key facilities, such as laboratories and libraries, and to ensure that classrooms are well-

maintained. Additionally, attention must be given to maintaining a favourable student-teacher ratio and supporting teacher development, which are crucial for fostering an environment conducive to learning.

The study also highlights the importance of educational planning, particularly for schools in less accessible areas. These schools face unique challenges, and targeted support and planning strategies are needed to improve their accessibility and address their specific needs. This approach is vital for enhancing educational outcomes in remote and underserved regions.

Finally, teacher support emerges as a critical factor in student performance. The qualifications and experience of teachers have a direct impact on student learning outcomes, making it essential to invest in professional development and support for educators. Reducing excessive workloads and providing adequate training can significantly enhance teaching effectiveness, ultimately improving student achievement.

5.5 Recommendations

Based on the study's findings, several recommendations are proposed to address the identified challenges and enhance the overall quality of education.

Firstly, there is a need to increase funding and resources, particularly for CDSS and DCSSs. These schools face significant disparities in textbook availability, laboratory and library facilities, and overall infrastructure. Allocating additional financial resources can help bridge these gaps by improving educational inputs and ensuring that all schools have the necessary resources to support effective student learning.

Secondly, it is crucial to enhance teacher support and development. Teachers play a central role in shaping student outcomes, and providing comprehensive professional development programs can improve their qualifications and teaching effectiveness. Moreover, ensuring that teachers have manageable workloads and access to ongoing training opportunities will strengthen their skills and overall performance in the classroom.

Thirdly, upgrading school facilities is essential for fostering better educational outcomes. Investments should be made in improving classroom conditions, laboratory

equipment, and library resources across all school types. Prioritizing the development of well-constructed laboratories and libraries will create an environment that supports academic achievement and encourages student engagement.

Fourthly, expanding and improving boarding facilities should be considered where feasible. Boarding schools have demonstrated positive effects on student performance by providing a stable and supportive learning environment. Therefore, it is important to continue supporting and enhancing these facilities to maximize their benefits for students.

Fifthly, addressing accessibility challenges is another key recommendation. Schools located in less accessible areas often face unique difficulties that impact student performance. Targeted strategies should be developed to improve transportation options, provide additional resources, and address logistical barriers that hinder academic success in these regions.

Sixthly, efforts should be made to support parental involvement in education. While the relationship between parental education and student performance is complex, creating programs that engage and assist parents can contribute to better educational outcomes. Parental involvement has the potential to positively influence students' academic progress and overall success.

Finally, it is important to regularly monitor and evaluate educational inputs. Implementing a system that tracks the availability and quality of resources across schools will allow stakeholders to identify areas for improvement and ensure that resources are allocated effectively to support student success. By focusing on these recommendations, stakeholders can work towards creating a more equitable and effective educational system that enhances the learning environment for all students.

5.6 Further work

To build on the findings of this study and address remaining gaps, several recommendations for further research are proposed.

First, longitudinal studies should be conducted to track the impact of financial inputs, textbook access, and other educational resources on student performance over time. This approach will provide deeper insights into the long-term effects of resource

allocation on academic outcomes. Second, comparative studies between different districts or regions could help understand how regional factors influence educational performance. These studies can identify best practices and strategies for improving outcomes across diverse contexts.

In addition, expanding qualitative research to include diverse stakeholder perspectives, such as students, parents, and community members, can offer a more comprehensive understanding of the factors influencing academic performance. These insights will complement quantitative data and provide a holistic view of educational challenges. Another area for further investigation is intervention studies, which could evaluate the effectiveness of specific measures aimed at improving educational resources, teacher qualifications, and infrastructure. Such studies can assess how targeted interventions impact student outcomes, providing evidence for more effective educational practices.

Lastly, policy analysis is needed to examine the impact of educational reforms on academic performance. This research can guide policymakers in making informed decisions and contribute to the development of evidence-based strategies for enhancing education in Malawi. By addressing these areas in future research, educators, policymakers, and stakeholders can work collaboratively to improve the quality of education and achieve better academic outcomes for students.

REFERENCES

- Akyeampong, K., Pryor, J., & Ampiah, J. G. (2018). *Access to basic education in Ghana: Politics, policies, and progress*. Palgrave Macmillan.
- Asamoah, K. (2014). *Educational policy in Ghana: An analysis of trends and outcomes*. Ghana Publishing House.
- Babbie, E. R., & Rubin, A. (2008). *Research methods for social work*. Brooks/Cole, Belmont.
- Baliyan, A., & Khama, G. (2020). How distance to school and study hours after school influence students' performance in mathematics and English: A comparative analysis. *International Journal of Educational Research*, 12(2), 45-59.
- Banda, J., & Simpemba, P. (2019). *A study of the utilisation of science mobile laboratories: A case of Kitwe District*.
https://www.academia.edu/122976899/A_Study_of_the_Utilisation_of_Science_Mobile
- Banda, M. (2019). The impact of boarding facilities on academic performance: Evidence from Malawi. *Journal of Education Research*, 15(2), 112-125.
- Banda, M. & Lunguzi, E. (2019). Challenges and opportunities in Malawi's educational system. *Education Journal*, 18(2), 55-70.
- Banilower, E. R., Smith, P. S., Weiss, I. R., Malzahn, K. A., Campbell, K. M., & Weis, A. M. (2013). *Report of the 2012 national survey of science and mathematics education*. Horizon Research, Inc.
- Becker, G. (1962). Investment in human capital: A theoretical analysis. *Journal of Political Economy*, 70(5), 9-49.
- Blatchford, P., Bassett, P., & Brown, P. (2003). Examining the effect of class size on classroom engagement and teacher-pupil interaction: Differences in relation to pupil prior attainment and primary vs. secondary schools. *Learning and Instruction*, 13(5), 503-529.

- Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal*, 9(2), 27-40.
- Bryman, A. (2001). *Social research methods*. Oxford University Press.
- Bryman, A. (2008). *Social research methods* (3rd ed.). Oxford University Press.
- Bryman, A. (2016). *Social research methods* (5th ed.). Oxford University Press.
- Chikondi, C., & Chilimampungu, L. (2017). Teacher development programs in Malawi: A review of effectiveness. *Malawi Educational Review*, 9(2), 51-60.
- Chimombo, J. P. G. (2005). Issues in basic education in developing countries: An exploration of policy options for improved delivery. *Journal of International Cooperation in Education*, 8(1), 129-152.
- Chimombo, J. P. G., Kunje, D., & Chimombo, J. (2014). *Increasing access to secondary school education in Malawi: Does private schooling deliver on its promises?* Privatisation in Education Research Initiative.
- Chimombo, J. P. G., & Maliro, D. (2016). *Education policy reform and its impact on access to secondary schooling in Malawi*. University of Malawi.
- Chinsinga, B. (2017). The impact of educational interventions on rural children in Malawi. *Development Studies Journal*, 13(2), 105-119.
- Chirwa, E., & Kazembe, A. (2019). The impact of educational resources on academic performance in secondary schools: A case study of Malawi. *African Journal of Education Research*, 23(2), 134–150.
- Chiwaya, P. (2020). *Accounting for the persistence of inequity in the distribution of secondary school teachers: The case of Zomba district secondary schools* University of Malawi.
- Chiwaya, P. (2023). *A critical examination of the persistent under-representation of students from community day secondary schools in Malawi's public universities* (Master's thesis). University of Malawi, Zomba, Malawi.

- Cohen, L., Manion, L., & Morrison, K. (2007). *Research methods in education* (6th ed.). Routledge.
- Clark, C., & Poulter, S. (2001). Are school libraries and librarians disappearing? A nationwide study. *School Library Journal*, 47(1), 16-18.
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches* (3rd ed.). SAGE Publications Inc.
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). SAGE Publications Inc.
- Daniel, D., & Poole, D. A. (2009). Learning for life: An ecological approach to pedagogical research. *Perspectives on Psychological Science*, 4(1), 56-68.
- Fraenkel, J. R., & Wallen, N. E. (2000). *How to design and evaluate research in education* (4th ed.). McGraw-Hill.
- Fraenkel, J. R., & Wallen, N. E. (2009). *How to design and evaluate research in education* (7th ed.). McGraw-Hill.
- Ghafoor, A. (2019). Education quality and teacher effectiveness in Sub-Saharan Africa. *African Educational Review*, 10(3), 58-73.
- Ghafoor, A., & Asma, R. (2019). Teacher quality and student performance in developing countries. *Journal of Education and Development*, 5(2), 134-150.
- Gondwe, F., Chiwaya, P., Nyamulani, O., & Winiko, S. (2022). *Research trends in theses studying education policy, planning, and leadership in Malawi: A case study*. Paper presented at the Research Dissemination Conference, Zomba, Malawi.
- Guilherme, A., & Jevuks, A. (2023). Socioeconomic status and education performance in Brazil. *E-International Journal of Educational Research*, 123(5), 102287.
- Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. Routledge.

- Hofstein, A., & Lunetta, V. N. (2004). The laboratory in science education: Foundations for the twenty-first century. *Science Education*, 88(1), 28-54.
- Jacobs, L. C., & Razavieh, A. (2010). *Introduction to research in education* (8th ed.). Cengage Learning.
- Jacobus de Hoop (2010). Selective secondary education and school participation in Sub-Saharan Africa: Evidence from Malawi. *Tinbergen Institute Discussion Paper, No. 10-041/2*, Tinbergen Institute, Amsterdam and Rotterdam. <https://hdl.handle.net/10419/86773>
- Kadzamira, E. C. (2006). *Teacher motivation and incentives in Malawi*. University of Malawi.
- Kadzamira, E. C., & 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.
- Kaimenyi, E. V. (2013). *Factors influencing academic performance of students in Kenya Certificate of Secondary Education in Imenti North District, Kenya* (Master's thesis). University of Nairobi.
- Kafumbu, F. T. (2020). An analytical report on the status of financing of secondary education in Malawi. *International Journal of Educational Development*, 72, 102127. <https://doi.org/10.1016/j.ijedudev.2019.102127>
- Kamwaza, T. (2019). The influence of parental involvement on students' academic performance in Malawi. *Journal of African Education*, 16(3), 45-62.
- Keith, C. H., Reinke, W. M., Dong, N., & Bradshaw, C. P. (2020). *Can effective classroom behavior management increase student achievement in middle school?* American Psychological Association.
- Kelly, G. J., & Lesh, R. A. (2000). *Handbook of research design in mathematics and science education*. Lawrence Erlbaum Associates.

- Kombe, R. (2006). Teacher training in Malawi: Historical context and future prospects. *Malawi Education Journal*, 8(2), 134-150.
- Kombo, D., & Tromp, D. (2006). *Proposal and thesis writing: An introduction*. Pauline's Publications Africa.
- Kunje, D. (2002). The Malawi integrated in-service teacher education programme: An experiment with mixed-mode training. *International Journal of Educational Development*, 22(3–4), 305–320.
- Lance, K. C., & Loertscher, D. V. (2016). *Library media programs and the digital divide: A new era of equity and access for students*. Libraries Unlimited.
- Luciano, C. (2019). Examining the effects of instructional leadership on secondary school teaching practices. *Educational Leadership Journal*, 23(2), 110–125.
- MacJessie-Mbewe, S., & Mwambucha, C. (2015). *Analysis of a complex policy domain: Access to secondary education in Malawi*. University of Massachusetts, UK.
- Mackenzie, J. (2014). *Public school funding and performance*. University of Delaware.
- Maonga, B., Chirwa, W., & Nyoni, P. (2024). *Factors affecting the provision of quality education in community day secondary schools in Malawi: A case study of Mangochi District*. Zhejiang Normal University.
- Maluma, P., & Banja, K. (2019). Factors affecting pupil academic performance at Grade Twelve (12) level of selected grant-aided secondary schools in Zambia. *Multidisciplinary Journal of Language and Social Sciences Education*, 2(2), 123-37.
- MasterCard Foundation. (2018). *The efficiency of secondary education in Sub-Saharan Africa: EESSA project. The case of Malawi*. Author
- McNeil, J., & Springfield, T. (2005). *Research methods for education practitioners*. Harper Education Press.

- Meadows, L. M., & Dodendorf, D. M. (1999). Data management and interpretation in qualitative research. *The Qualitative Report*, 4(1), 1–15.
- Ministry of Education. (2014–2022). *Education statistics reports*. Author
- Ministry of Education. (2021). *Education management information system*. Author
- Ministry of Education. (2022). *Malawi education sector analysis*. Author.
- MoEST, & UNESCO. (2008). The National Development of Education: *National report of Malawi*. Author.
- MoEST. (2008b). *National strategy for teacher education and development: Primary and secondary education 2007–2017 (Version 1)*. Author.
- MoEST. (2013). *National education policy*. <http://www.csecmw.org/National-Education-Policy.pdf>.
- Mlangeni, T., & Chiotha, S. (2016). *Why rural community day secondary schools students' performance in physical science examinations is poor in Lilongwe Rural West Education District in Malawi*. Natural Resources College, Malawi.
- Mlagha, E. K. (2016). *Investigating the association between school financing and attainment of education outcomes: The case of selected conventional and community day secondary schools in Central East Education Division* (Master of Education Thesis). University of Malawi.
- Mphande, L. (2020). The role of boarding schools in enhancing educational quality in Malawi. *International Journal of Educational Development*, 25(3), 211–225.
- Mulera, D. M., Ndala, K. K., & Nyirongo, R. (2017). Analysis of factors affecting pupil performance in Malawi's primary schools based on SACMEQ survey results. *International Journal of Educational Development*, 54(1). <https://doi.org/10.1016/j.ijedudev.2017.04.001>

- Mussa, R. (2015). Factors affecting academic performance in Malawi: The role of socio-economic status and school location. *Malawi Journal of Economics and Social Studies*, 7(1), 45–58.
- Mwenda, C., & Mgomezulu, B. (2018). Educational leadership and its impact on secondary school performance in Malawi. *Malawi Journal of Education and Leadership*, 5(2), 67–85.
- Ndambo, P., Chirwa, M., & Banda, T. (2021). The impact of inclusive education on student performance in Malawi secondary schools. *African Journal of Education*, 45(3), 123–136.
- Nkhoma, P., & Chimombo, J. (2018). The role of teacher qualifications in determining student outcomes in Malawi. *International Journal of Educational Development*, 60(1), 20–27. <https://doi.org/10.1016/j.ijedudev.2017.11.004>
- Nyasulu, M. (2020). *Factors influencing learner academic performance in Seventh-Day Adventist secondary schools in Malawi* (Unpublished master's thesis). Mzuzu University, Malawi.
- Osei, A. (2020). Resource allocation and educational outcomes in Ghana. *African Journal of Educational Studies*, 4(2), 45-58.
- Patton, M. Q. (2015). *Qualitative research and evaluation methods* (4th ed.). SAGE Publications.
- Popper, K. (2005). *Research methods for education practitioners*. Harper Education Press.
- Sahlberg, P. (2018). *Finnish lessons 2.0: What can the world learn from educational change in Finland?* Teachers College Press.
- School Library Association. (2012). *Building a culture of collaboration: School library contribution to educational improvement*. School Library Association.
- UNESCO. (2021). *Global education monitoring report: Inclusion and education*. Author

- UNICEF. (2019). *Malawi Education Sector Analysis*.
<https://www.unicef.org/malawi/reports/malawi-education-sector-analysis>.
- Vizyalona, X., Chirwa, Y., & Nyoni, Z. (2024). Challenges facing the implementation of chemistry and physics as separate and stand-alone subjects in the revised secondary school curriculum in Malawi: A case study of Blantyre District. *Journal of Educational Research in Africa*, 52(1), 45–60.
- Waheed, A., Abbas, J., & Yasir, M. (2020). The role of transformational leadership in enhancing educational outcomes: Insights from secondary schools. *International Journal of Educational Leadership*, 15(2), 45–62.
- Wambui, K. (2019). *Factors influencing students' academic performance in Kenya Certificate of Secondary Education in Kirinyaga Central Sub-County, Kirinyaga County, Kenya* (Master's thesis). University of Nairobi
- White, H. (2005). Challenges in measuring the impact of development aid. *World Bank Policy Research Working Paper No. 3567*. World Bank.
- Zamasiya, B. (2017). The effects of teacher motivation on rural education in Southern Africa. *African Journal of Educational Studies*, 12(3), 34–48.

APPENDICES

Appendix I : KEY INFORMANT INTERVIEW GUIDE FOR THE HEAD-TEACHER

School code	Date (dd/mm/yy)	Interview number

A. Introduction

This interview seeks to explore the influence of Educational Inputs on Academic Outcomes in different secondary School settings.' The discussion will center on how external factors influence students' academic achievements, the role of internal factors in shaping academic performance, and the impact of financial resources on school performance, particularly in MSCE results.

1.1 What is your present role?

1.2 What is your highest educational attainment?

Section A: Teachers' characteristics

1.3 How many teaching staff members do you have, categorized by gender?

	1. Male
	2. Female
	3. Total

1.4 Following the previous question, please provide the count of qualified teaching staff at your school.

	1. Diploma
	2. Bachelor's Degree

- ☐ 3. Master's Degree
- ☐ 4. Any other please specify

SECTION B: Information on students enrolment and performance

3.1 How many students were there in your school, categorized by gender?

- ☐ 1. Male
- ☐ 2. Female
- ☐ 3. Total

3.2 How many students were there in the academic year of 2022?

- ☐ 1. Form 1
- ☐ 2. Form 2
- ☐ 3. Form 3
- ☐ 4. Form 4

3.3 What is the pass rate performance of your school in the MSCE results over the last five years?

- ☐ 1. 2019
- ☐ 2. 2020
- ☐ 3. 2021
- ☐ 4. 2022

SECTION C: Information on physical facilities and teaching/learning resources

4.0 Are the following items present? Yes or no responses.

Item	Yes	Not
a) Desks	☐	☐
b) Lab apparatus for all science subjects.	☐	☐

Item	Yes	Not
c) Sufficient provision of prescribed textbooks for both teachers and students in Form 3 & 4.		
d) Electricity		
e) Hydro-power		
f) Solar		
g) Generator		
h) Bio-gas		

4.1 What are the conditions of the following materials?

Input	Tick the appropriate response	
Availability Of Textbooks	▪ Enough	Not enough
Response		
Teaching experience	• Less than 5	More than 10 yrs
Student-Teacher Ratio	▪ Adequate	Inadequate
Workload	▪ Less than 20	More than 20 periods
Response		
Financial Resources	▪ <25m MWK	≥25m MWK
Response		
Availability Of Laboratories	▪ Improvised	Well-constructed
Response		
Availability Of Lab Apparatus	▪ Enough	Not Enough
Response		
Availability Of Library	▪ Improvised	Well-constructed
Response		
Availability Of Boarding Facilities	▪ Without	With
Response		
Quality Of Classrooms	▪ Poor	Good condition
Response		

Item	Yes	Not
SECTION D: Information on the financial inputs		

1.5 From where does your school derive its financial resources, and what is the amount obtained from them in 2023?

Source	Source Amount
1. Government:	
2. Donations:	
3. User fees:	
4. Income generating projects:	
5. Parents 'contributions:	
6. Grand total	

SECTION E: GENERAL QUESTIONS

6.1 . In terms of financial constraints, what specific challenges impact the operation of your institution?

.....

6.2 . Regarding teaching and learning resources, how frequently are they made available?

.....

6.3 . Regarding teaching and learning resources, what measures are taken to overcome financial challenges and maintain a consistent availability?

.....

6.4 We have reached the end of our interview. Do you have any additional suggestions for the influence of educational inputs on output?

THANK YOU

Appendix II: STUDENT QUESTIONNAIRE ON EDUCATIONAL INPUTS

Name of school date

Dear Respondent,

My name is Gracian Sangulukani Kachale, I am a student at University of Malawi, School of Education, Department of Education Foundations. I am currently undertaking research on the effects of Educational Inputs on Academic performance secondary Schools in Mangochi District, Malawi in fulfillment of the requirements for the master degree of education (PPL). You have been selected to be part of this research. You are kindly requested to honestly complete all parts of this questionnaire by ticking or filling in the right box/space.

B. Introduction

This interview aims to identify the relationship between educational inputs and educational out in secondary school in Mangochi district. It will focus on the impact of exogenous inputs on students' academic performance, endogenous inputs and students' academic performance and financial inputs on school performance at MSCE results.

SECTION A: General information on student and school

1.1 Sex:

☐
☐

1. Boy

2. Girl

1.2.Location of the school:

☐
☐
☐

2. Urban

3. Rural

4. Semi-Urban

1.3 Write down your MSCE points which you scored in 2023

1.4 What type of school is it?

- | | |
|--------------------------|-------------------------------------|
| ☐ | 1. CSS with a boarding facility |
| ☐ | 2. CSS without a boarding facility |
| ☐ | 3. CDSS with a boarding facility |
| ☐ | 4. CDSS without a boarding facility |
| ☐ | 5. Private SS |
| ☐ | 6. National SS |

1.5 Can you specify if you live on campus, off campus, or self-boarding?

- | | |
|--------------------------|-------------------------|
| ☐ | 1. Residential |
| ☐ | 2. Non-residential |
| ☐ | 3. Self-boarding |
| ☐ | 4. Not applicable (N/A) |

1.6 For day students, how far is the distance you travel from your residence to school?

- | | |
|--------------------------|----------------|
| ☐ | 1. 1-2 Km |
| ☐ | 2. 2-3 Km |
| ☐ | 3. 3-4 Km |
| ☐ | 4. 5 and above |

SECTION B: Information on family Background
--

1.7 What is your parental status?

- | | |
|--------------------------|---------------------------|
| ☐ | 1. Total Orphan |
| ☐ | 2. Only mother is alive |
| ☐ | 3. Only Father is alive |
| ☐ | 4. Both parents are alive |

1.8 How many siblings are there in your family?

1.9 What is the highest educational level attained by your parents or guardians?

- | | |
|--------------------------|---|
| ☐ | 1. Never went to school |
| ☐ | 2. Went to primary school but never completed |
| ☐ | 3. Completed primary school |
| ☐ | 4. Went to secondary school but never completed |
| ☐ | 5. Has a MSCE |
| ☐ | 6. Never completed University |
| ☐ | 7. Has diploma |
| ☐ | 8. Has Bachelor's degree |
| ☐ | 9. Did a postgraduate course (Master/PhD) |

1.10 What occupations do your parents/guardians have?

- | | |
|--------------------------|----------------------------------|
| ☐ | 1. Teacher |
| ☐ | 2. Doctor |
| ☐ | 3. Fishing |
| ☐ | 4. Farming |
| ☐ | 5. Private service |
| ☐ | 6. Business owner |
| ☐ | 7. Homemaker |
| ☐ | 8. Other (please specify): _____ |

1.11 What kind of energy is utilized for lighting in your school/parents/guardians' residence?

- | | |
|--------------------------|----------------------------------|
| ☐ | 1. Electricity |
| ☐ | 2. Solar panel |
| ☐ | 3. Biogas |
| ☐ | 4. Other (please specify): _____ |

SECTION C: Information on infrastructure
--

1.12 Instructions: Please rate the QUALITY of the following school infrastructure by checking the appropriate box for each type.

a) Classrooms:

☐	1. Poor
☐	2. Below Average
☐	3. Average
☐	4. Above
☐	5. Excellent

b) Laboratories

☐	1. Poor
☐	2. Below Average
☐	3. Average
☐	4. Above
☐	5. Excellent
☐	6. Not applicable

c) Library

☐	1. Poor
☐	2. Below Average
☐	3. Average
☐	4. Above
☐	5. Excellent

6. Computer Labs

☐	1. Poor
☐	2. Below Average
☐	3. Average
☐	4. Above
☐	5. Excellent
☐	6. Not applicable

7. Overall School Environment

☐	1. Poor
--------------------------	---------

- | | |
|--------------------------|------------------|
| ☐ | 2. Below Average |
| ☐ | 3. Average |
| ☐ | 4. Above |
| ☐ | 5. Excellent |

1.13 The condition of classrooms, the existence of lab tools, library resources, desk availability, textbooks, and the student-to-teacher ratio collectively influence my learning experience.

- | | |
|--------------------------|----------------------|
| ☐ | 1. Strongly disagree |
| ☐ | 2. Disagree |
| ☐ | 3. Neutral |
| ☐ | 4. Agree |
| ☐ | 5. Strongly Agree |

1.14 The textbooks supplied at my school enhance my comprehension of the subjects assessed in the MSCE.

- | | |
|--------------------------|----------------------|
| ☐ | 1. Strongly disagree |
| ☐ | 2. Disagree |
| ☐ | 3. Neutral |
| ☐ | 4. Agree |
| ☐ | 5. Strongly Agree |

1.15 We possess sufficient textbooks, an ample number of teachers, adequate classrooms, sufficient desks, and a conducive learning environment.

- | | |
|--------------------------|----------------------|
| ☐ | 1. Strongly disagree |
| ☐ | 2. Disagree |
| ☐ | 3. Neutral |
| ☐ | 4. Agree |
| ☐ | 5. Strongly Agree |

1.16 The availability and quality of laboratory equipment impact my understanding of science subjects like Agriculture, Physics, Chemistry, Biology, etc.

- | | |
|--------------------------|----------------------|
| ☐ | 1. Strongly disagree |
| ☐ | 2. Disagree |
| ☐ | 3. Neutral |
| ☐ | 4. Agree |
| ☐ | 5. Strongly Agree |

Thank you!

Appendix III : Questionnaire for Teachers.

Teacher code	Date -(dd/mm/yy)	Interview number

1 Introduction

Dear Respondent,

I am Gracian Sangulukani Kachale, a student at the University of Malawi, School of Education, Department of Education Foundations. I am currently conducting research on the "influence of educational Inputs on Output in different secondary school settings in Malawi," as part of the requirements for the Master's degree in Education. Your participation in this research is essential.

Please complete all sections of this questionnaire honestly by marking or filling in the appropriate boxes or spaces. I want to assure you that your responses will be treated with utmost confidentiality. Your information will be used solely for the purpose of this academic research and will not be disclosed to any third party.

Your cooperation is highly appreciated.

Thank you.

Section B. QUESTIONS

1.1 Indicate your gender:

☐
☐

1. Male

1. Female

1.2 Specify your age:

☐
☐
☐
☐

1 25 – 30

2 31 – 35

3 36 – 40

4 41 and above

1.3 Indicate of your professional qualifications

- | | |
|--|-----------------------------------|
| | 1. Diploma |
| | 2. Bachelor's Degree |
| | 3. Master's Degree |
| | 4. Any other please specify |

1.4 Specify the kind of diploma/degree you have earned.

- | | |
|--|----------------------------|
| | 1. B. Ed. |
| | 2. General Degree e.g. BSc |
| | 3. MEd |
| | 4. Diploma in Education |

a. Indicate the number of years you have been teaching.

- | | |
|--|-----------------|
| | 1. 0-5 years |
| | 2. 6-10 years |
| | 3. 11-15 years |
| | 4. 16-20 years |
| | 5. 21 and above |

a. Specify the number of work periods per week.

- | | |
|--|-----------------|
| | 1. 0-5 |
| | 2. 6-10 |
| | 3. 11-15 |
| | 4. 16 - 20 |
| | 5. 20 and above |

a. We consistently achieve strong MSCE results due to the availability of sufficient teaching resources, effective methods, and a conducive learning environment.

- | | |
|--|----------------------|
| | 1. Strongly disagree |
| | 2. Disagree |
| | 3. Neutral |

- ☐ 4. Agree
- ☐ 5. Strongly Agree

a. There is a connection between the resources provided at my schools and the academic performance of our students.

- ☐ 1. Strongly disagree
- ☐ 2. Disagree
- ☐ 3. Neutral
- ☐ 4. Agree
- ☐ 5. Strongly Agree

1.9 My teaching experience, workload, professional qualifications, and classroom management influence the MSCE results in our school

- ☐ 1. Strongly disagree
- ☐ 2. Disagree
- ☐ 3. Neutral
- ☐ 4. Agree
- ☐ 5. Strongly Agree

1.10 The key to our positive aspects and strong MSCE performance is regular assessments, makeup classes, and thorough syllabus coverage.

- ☐ 1. Strongly disagree
- ☐ 2. Disagree
- ☐ 3. Neutral
- ☐ 4. Agree
- ☐ 5. Strongly Agree

1.11 In our school, all teachers ensure that the subjects and topics covered in the curriculum are suitable and pertinent for the MSCE examinations

- ☐ 1. Strongly disagree
- ☐ 2. Disagree

- | | |
|--|-------------------|
| | 3. Neutral |
| | 4. Agree |
| | 5. Strongly Agree |

1.12 From my viewpoint, financial contributions like individual salaries, incentives, and the school budget significantly contribute to enhancing school performance.

- | | |
|--|---------------------|
| | 1 Strongly disagree |
| | 2. Disagree |
| | 3. Neutral |
| | 4. Agree |
| | 5. Strongly Agree |

1.13 For strong MSCE results, we use study cycles, follow national standards, complete the syllabus on time, and employ effective instructional leadership

- | | |
|--|----------------------|
| | 1. Strongly disagree |
| | 2. Disagree |
| | 3. Neutral |
| | 5. Agree |
| | 6. Strongly Agree |

Thank you very much.

Appendix IV: KEY INFORMANT INTERVIEW GUIDE FOR Education Division Manager.

EDM code	Date dd/mm/yy)	Interview number

A. Introduction

This interview aims to identify the influence of educational inputs on academic output across different secondary schools within your region. I have just sampled seven secondary schools in Mangochi district to present other schools. It will focus on the impact of exogenous inputs on students' academic performance, endogenous inputs and students' academic performance and financial inputs on school performance at MSCE results.

❖ Different Performance of Schools:

A. Performance Disparities:

1. Can you provide an overview of the current academic performance of schools in your division, highlighting any noticeable disparities?

.....

2. What factors do you believe contribute to the variations in academic performance among schools within the division?

.....

B. Identification of Challenges:

1. In your assessment, what specific challenges do schools, especially CDSSs, face that might be influencing their academic performance?

.....

2. Are there patterns or recurring issues that you have observed across schools with lower academic performance?

.....

C. Resource Allocation and Utilization:

1. How is the allocation and utilization of resources managed among schools in the division, and how does this impact their academic outcomes?

.....
.....

2. Can you provide information on the guidelines and policies utilized when allocating resources?

.....
.....

3. Are there challenges in distributing resources, and how does this affect CDSSs specifically?

.....
.....

D. Status of CDSSs:

1. Could you provide an overview of the current status of CDSSs (Community Day Secondary Schools) within your division in terms of academic performance?

.....

2. What unique challenges or strengths do CDSSs exhibit compared to other types of secondary schools?

.....
.....

E. Strategies for Improvement:

1. What interventions or strategies are being implemented to improve the academic performance of CDSSs in the division?

.....

F. Future Planning for CDSSs:

1. Looking ahead, what plans or initiatives are being considered to uplift the academic standing of CDSSs in the division?

.....

Thank you very much

Appendix V: KEY INFORMANT INTERVIEW GUIDE FOR DEYS.

DEM code	Date (dd/mm/yy)	Interview number

A. Introduction

This interview aims to identify the influence of educational inputs on academic output across different secondary schools within your region. I have just sampled seven secondary schools in Mangochi district to present other schools. It will focus on the impact of exogenous inputs on students' academic performance, endogenous inputs and students' academic performance and financial inputs on school performance at MSCE results.

Time of questions

1. How do you assess the quality of education in district schools?

.....

2. As DEYS, do you see a link between allocated educational resources and student performance? If yes, please explain this connection.

.....

3. How is the allocation and utilization of resources managed among schools in the district, and how does this impact their academic outcomes?

.....

4. Can you share details about the financial allocation for district schools, including per-student expenditures each fiscal year? Are there variations based on school types?

.....

5. Can you provide an overview of the current academic performance of schools in your division, highlighting any noticeable disparities?

-
-
6. What factors do you believe contribute to the variations in academic performance among schools within the division?
-
-
7. Could you provide an overview of the current status of CDSSs (Community Day Secondary Schools) within your division in terms of academic performance?
-
-
8. What unique challenges or strengths do CDSSs exhibit compared to other types of secondary schools?
-
-
9. What interventions or strategies are being implemented to improve the academic performance of CDSSs in the division?
-
-
10. Looking ahead, what plans or initiatives are being considered to uplift the academic standing of CDSSs in the division?
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Thank you very much.

Appendix VI: FOCUS GROUP DISCUSSIONS FOR STUDENTS

1. How do factors such as classroom conditions, availability of lab equipment, access to library resources, adequacy of desks, financial inputs, availability of textbooks, and student-teacher ratio affected your preparation for the MSCE exam?
.....
2. Textbooks: How do the textbooks provided in your school contributed to your understanding of subjects tested in the MSCE?

3. Laboratory Equipment: How does the availability and quality of laboratory equipment affect your understanding of science subjects?
.....
4. Library Resources: Can you share instances where resources from the school library have been instrumental in your preparation for MSCE exams?
.....
5. Classroom Materials: In terms of everyday learning, how do materials available in the classroom such as charts contributed to your understanding of topics?
.....
6. How does teachers' dedication to lessons and continuous assessments as per the class timetable influence your MSCE
.....
7. What teaching methods do you find most effective in your school in helping you prepare for the MSCE, and how do they impact your understanding of the subjects?
.....
8. How does the classroom environment and management in your school influence your ability to concentrate and learn, especially in subjects assessed in the MSCE?
.....
9. In summary, from what you've seen and experienced, what important things can we understand about how outside influences, what you're learning, and your grades connect in the MSCE program?

Thank You!