EFFECT OF UNIT COSTS ON STUDENTS' PERFORMANCE IN KENYA CERTIFICATE OF SECONDARY EDUCATION EXAMINATIONS IN PUBLIC SECONDARY SCHOOLS IN VIHIGA SUB-COUNTY, KENYA

BY

FREDRICK OGWENO NYAWANDA

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF EDUCATION IN PLANNING AND ECONOMICS OF EDUCATION

SCHOOL OF EDUCATION

MASENO UNIVERSITY

© 2019

DECLARATION

Declaration by the Candidate

This research thesis is my original work and has not been presented to any other university for a degree.

Signature…..……. **Date ……**

FREDRICK OGWENO NYAWANDA

PG/MED/038/2006

This research thesis has been submitted for examination with our approval as university supervisors

Signature …… **Date ……**

PROF. M. A. OLEL

Department of Educational Management and Foundations

Maseno University

Signature …… **Date ……**

DR. J.O. SIKA

Department of Educational Management and Foundations,

Maseno University

ACKNOWLEDGEMENTS

I would like to acknowledge the Almighty God for giving me the gift of life and good health, during the preparation of this thesis. Secondly, I would like to convey my sincere thanks to my supervisors, Dr. M. A. Olel and Dr. J.O. Sika for their dedication to supervise and advise me during the preparation of this thesis. They took time from their busy schedules to guide me through the development and completion of this work. I also thank Prof. Simatwa, Prof. Agak, Prof. Othuon, Dr. Kabuka, Dr. C. O. Ariko and Prof. Ayodo (Posthumously) for their guidance and advice during preparation of this work. I wish to thank Dr. Opiyo Arudo for encouraging me to pursue higher education. I also thank Joy Peris Akoth for her technical advice. I wish to express my heartfelt appreciation to Professor F. Q Gravenir for his professional guidance and counseling while conceptualizing and writing this thesis.

I also take this opportunity to thank the staff at Maseno University especially the library staff and members of the Department of Educational Management and Foundations, for their support and guidance. I would also like to thank staff at Maseno School of Graduate Studies, the principals and teachers of public secondary schools in Vihiga Sub County and Vihiga Sub County Director of Education for participating in this study. Lastly, to everyone who contributed in this work, thank you so much.

DEDICATION

To my parents, Mr. Robert Nyawanda and Mrs. Jane Nyawanda for bringing me up to this level; my dear wife Judy for her love, encouragement and understanding during this research; my children Shammah, Chiwo and Baraka for their support, inspiration and encouragement; lastly but not least my brother George and sister Clarice for their encouragement and financial support.

ABSTRACT

Education contributes to economic growth, enhanced productivity, national and social development, and social equity hence governments and households heavily invest in all forms of education. Despite the heavy expenditure on education by the governments and households, little attention has been given to the unit cost of education of each student and its effect on academic performance. Schools in Vihiga Sub-County charge extra levies besides Ministry of Education(MOE) recommended fee guideline yet the Sub-county still has low KCSE Mean Score of 5.361(C-) which is below the average KCSE Mean Score of 6 (C). The purpose of this study was to determine the effect of unit costs on students' performance in KCSE examinations in public secondary schools in Vihiga Sub-County. The objectives were; to establish the effect of teacher unit costs, non-teacher unit costs, and school unit costs on students' performance in KCSE examinations in Vihiga Sub-County. A conceptual framework which posits that students' performance in examination is influenced by teacher unit costs, non-teacher unit costs and school unit costs was used. Ex post facto, descriptive survey and correlation research designs were used. The population consisted of 20 head teachers and 350 teachers in 20 public secondary schools and one Sub-County Director of Education. Saturated sampling method was used to get a sample of 18 head teachers and 307 teachers in 18 public secondary schools and one Sub-County Director of Education. Data was collected using questionnaires, document analysis and interview schedules. The questionnaires were piloted in two schools that did not take part in the actual study to establish reliability. Test retest method was used to estimate the reliability of the instruments. It generated Pearson's (r) Coefficients of 8.5, 0.79 and 8.2 for head teachers', principal's interview schedule and teacher's questionnaire respectively. Instruments were validated by experts in the Department of Educational Management and Foundations. Quantitative data collected from the questionnaires and document analysis guide were analyzed using descriptive statistics in the form of percentages to indicate students' enrolment in each school by category and the type of school, and frequency tables to show the rate of responses for each category of questionnaire, and means to get teacher unit costs, non-teacher unit costs and school unit costs, and inferential statistics in form of Pearson's Correlation(r) to determine the effect of teacher unit costs, non-teacher unit cost, school unit costs on students' performance in KCSE. Qualitative data obtained from interview schedule were analyzed as themes and sub-themes emerged. The null hypothesis was tested at 0.05 level of significance. The study established that there is moderate effect of teacher unit costs on students' performance in KCSE examinations, positive effect of non-teacher unit costs and school unit costs on students' performance in KCSE examinations in public secondary schools. It was concluded that there is moderate effect of teacher unit costs on students' performance in KCSE examinations in public secondary schools; there is significant positive effect of non-teacher unit costs and school unit costs on students' performance in KCSE examinations in public secondary schools in Vihiga Sub-County. It was recommended to MOE to ensure programmed teachers' salary increments, increase FDSE to schools and encourage more private partners to participate in education. This study gives valuable information to MOE about adequate teachers' salaries and education investment by government and households.

TABLE OF CONTENTS

TITLE PAGE i
DECLARATION ii
ACKNOWLEDGEMENTS iii
DEDICATION iv
ABSTRACT v
TABLE OF CONTENTS vi
LIST OF ABBREVIATIONS AND ACRONYMS ix
LIST OF TABLES xi
LIST OF FIGURES xiii
LIST OF APPENDICES xiv

CHAPTER ONE: INTRODUCTION 1
1.1 Introduction 1
1.2 Background to the Study 1
1.3 The Statement of the Problem 11
1.4 Purpose of the Study 12
1.5 Objectives of the Study 12
1.6 Research Hypotheses 12
1.7 Significance of the Study 13
1.8 Conceptual Framework 13
1.9 The Scope of the Study 15
1.10 Limitations of the Study 16
1.11 Assumptions of the Study 17
1.12 Definition of Terms 17

CHAPTER TWO: REVIEW OF RELATED LITERATURE 19
2.1 Introduction 19
2.2 The State of Unit Cost in Developed and Developing Countries 19
2.3 Teacher Unit Costs and Students' Academic Performance in the World 22
2.4 Non -Teacher Unit Costs and Students' Academic Performance 25
2.5 School Unit Costs and Students' Academic Performance 34

CHAPTER THREE: RESEARCH METHODOLOGY 38
3.1 Introduction 38
3.2 Research Design 38
3.3 Area of Study 39
3.4 Study Population 39
3.5 Samples and Sampling Procedure 40
3.6 Instruments of Data Collection 41
3.6.1 Head teacher's Questionnaire (HTQ) 41
3.6.2 Teacher's Questionnaire (TQ) 42
3.6.3 Head teacher's Interview Schedule 42
3.6.4 Document Analysis Guide (DAG) 42
3.7 Validity of the Instruments 43
3.8 Reliability of the Instruments 43
3.9 Data Collection Procedures 44
3.10 Method of Data Analysis 44
3.11 Ethical Consideration 45

CHAPTER FOUR: RESULTS AND DISCUSSION 47
4.1 Introduction 47
4.2 Instruments Return Rate 47
4.2 Demographic Characteristics of the Respondents 48
4.2.1 Distribution of Schools by Category and Type 48
4.2.2 Distribution of Teachers by School Category and Type 49
4.2.3 Principals' Distribution by Teaching Experience and School Category 50
4.2.4 Teachers Distribution by Teaching Experience and School Type 50
4.2.5 School Enrolment Trend 2010 - 2013 51
4.2.6 Students' Performance Index in KCSE Examination by School Type 52
4.3 Teacher unit costs and Students' performance in KCSE 54
4.4 Non-Teacher Unit Costs and Students' Performance in KCSE 64
4.5 School Unit Cost and Students' Performance in KCSE 69

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS 73
5.1 Introduction 73
5.2 Summary of the Findings of the Study 73
5.2.1 Teacher Unit Cost and Students' performance in KCSE examinations 73
5.2.2 Non-Teacher Unit cost and Students' performance in KCSE Examinations 74
5.2.3 School Unit Cost and Students' Performance in KCSE Examinations 75
5.3 Conclusions 75
5.4 Recommendations of the Study 76
5.5 Suggestions for Further Research 77
REFERENCES 78
APPENDICES 85

LIST OF ABBREVIATIONS AND ACRONYMS

B.E.S : Boarding, Equipment & Stores

CBE : Curriculum Based Establishment

EBE : Enrollment Based Establishment

EFA : Education for All

E.W. &C : Electricity, Water & Conservancy

F.P.E : Free Primary Education

F.D.S.E : Free Day Secondary Education

G.D.P : Gross Domestic Product

G.E.R : Gross Enrollment Ratio

K.C.P.E : Kenya Certificate of Primary Education

K.C.S.E : Kenya Certificate of Secondary Education

K.E.S.S.P : Kenya Education Sector Support Programme

KNEC : Kenya National Examinations Council

L.T. &T : Local Travel & transport

MDG : Millennium Development Goals

MOE : Ministry of Education

OECD : Organization for Economic Cooperation and Development

P.E : Personal Emoluments

P.A : Parents Association

R.M. & I : Repairs, Maintenance & Improvement

S.E.S : School, Equipment & Stores

TSC : Teachers Service Commission

UNECE : United Nations Economic Commission for Europe

UNESCO : United Nations Education Scientific and Cultural organization

LIST OF TABLES

TABLE **PAGE**

Table 1. 1: Education Expenditure in Kenya, 2014-2018 5

Table 1. 2: National KCSE Mean Score, 2012-2013 8

Table 1. 3: Vihiga County, KCSE Sub-County Mean Score, 2010-2013 9

Table 1. 4: Vihiga Sub-County Public Schools KCSE Mean Score, 2010-2013 10

Table 3. 1: Sample Frame 41

Table 4. 1: Questionnaire and return rate 48

Table 4. 2: Distribution of schools by category and type 48

Table 4. 3: Distribution of teachers by school category and type 49

Table 4. 4: Principals Distribution by Teaching Experience and school category 50

Table 4. 5: Teachers Distribution by Teaching Experience and school type 51

Table 4. 6 : School Enrolment Trend From 2010 To 2013 52

Table 4. 7: Students' Performance Index in KCSE Examination by school type 53

Table 4. 8: Distribution of Teachers by Teachers' Job group 55

Table 4. 9: Distribution of Teachers by annual gross salary in boarding schools 2010-2013 56

Table 4. 10: Vihiga Sub County Teacher Unit Cost in boarding Schools 57

Table 4. 11: Distribution of Teachers by Annual gross salary in day schools 2010- 2013 58

Table 4. 12: Vihiga Sub County Teacher Unit Cost in day Schools 59

Table 4. 13: Correlation of Teacher Unit Cost in Boarding Schools and KCSE Mean 60

Table 4. 14: Correlation of Teacher Unit Cost in Day Schools and KCSE Mean 61

Table 4. 15: A comparison of Fee in day and boarding schools 65

Table 4. 16: Correlation of Fee Vote Head and KCSE Mean 66

Table 4. 17: School Unit Cost in Boarding and Day Schools 70

Table 4. 18:Correlation of School Unit Cost and KCSE Mean Score in 2010 71

LIST OF FIGURES

FIGURE **PAGE**

Figure 1.1: Conceptual Framework of unit costs and students' performance in KCSE 15

LIST OF APPENDICES

APPENDIX **PAGE**

Appendix 1: Head teacher's Questionnaire. 85

Appendix 2: Teacher's Questionnaire 91

Appendix 3: Head teacher's Interview Schedule. 92

Appendix 4: Document Analysis Guide. 93

Appendix 5: Pearson's Correlation Coefficient (r) 93

Appendix 6: Proposal approval. 94

Appendix 7: Research permit 95

Appendix 8: Vihiga Sub-County Map 96

CHAPTER ONE

INTRODUCTION

1.1 Introduction

This section describes the background to the study, statement of the problem, purpose of the study, objectives of the study, research hypotheses, and significance of the study, conceptual framework, and scope of the study, limitation of the study, assumption of the study and definition of terms.

1.2 Background to the Study

Studies carried in Pakistan by Hijazi and Naqvi (2006), observed that performance in examination depends on socio-economic, psychological and environmental factors. The study noted that students' performance depends on socio-economic background thus those from affluent families tend to perform better than those from low class. Whether school resources for students' academic achievement matters or not, has been debated for at least 30 years, primarily with data from schools in public sector (Graddy & Stevens, 2005). The causal relationship between educational investment and students' academic performance continues to attract debate. Despite decades of intensive study, there is no general consensus regarding the effectiveness of monetary educational investments in students' academic achievement (Kang, 2007). In particular, papers that summarize the debate on the effects of public school expenditures on students' academic achievement often advocate conflicting views. For example studies by Krueger(2003) and Greenwald (1996) as cited in(Kang, 2007), are in favor of the effectiveness of public school expenditures in relation to students' academic achievement while Betts and Hanushek (as cited in Kang, 2007), cast doubt on the effectiveness of public school expenditures

on the students' academic achievement. It is therefore not yet known whether there is any effect of school unit costs (recurrent expenditure per academic year per student) on students' performance in KCSE examinations in public secondary schools. This study therefore sought to fill this gap.

According to Raudenbush and Willms (1995), structural differences across schools in the world create a variation in the unit costs and academic achievement hence a conflict. Furthermore variation in charges per school along structural differences in schools creates a conflict both in unit costs, expenditures on items and academic performance. In a study by Raudenbush (2004), it was noted that high poverty schools fail in examination mean scores. In considering the effect of unit costs and academic achievement, there was a clash of opinions. The studies by Raudenbush and Willms (1995) and Raudenbush (2004) noted that there is a conflict of opinion between unit cost and academic achievement in schools. The study by Raudenbush (2004) also noted that high poverty schools fail in examination mean scores. From these studies, there is no agreement of opinion concerning unit costs and academic achievement. The present study sought to fill this gap by finding out if there is any effect of school unit costs (recurrent expenditure per academic year per student) on students' performance in KCSE examinations in public secondary schools in Vihiga Sub County

Studies carried in Sub-Saharan Countries by Lewin (2008), observed that the demand for secondary education is rising very fast in Africa; faster than for primary education and faster than any other region of the world. The study noted that there is a strong desire to become competitive in today's globalized world, so our economies will grow faster and improve the lives

of our people. The study observed that the global economy of today is increasingly based on knowledge, technology and skill. The study suggests that while we continue to seek progress on primary education, we need also to increase our focus on secondary education. There is need to expand access, improve quality and relevance, and improve equity—both between boys and girls, between urban and rural areas, between the rich and the poor, and across regions within countries. The study by Lewin (2008), noted that Africa spends roughly the same percent of GDP on education as the East Asian countries. But the outcomes in terms of academic performance are very different, mainly because of the disparities in the school unit costs. The study by Lewin did not single out at any particular academic outcome to justify the disparity, The present study, however, went further to establish whether there is any effect of school unit costs on outcomes in academic performance in KCSE examination in public secondary school in Vihiga Sub-County.

The Kenya government introduced 'a sector-wide approach' to education planning in 2005. This approach is known as 'The Kenya Education Sector Support Programmes 2005-2010' (KESSP) (Republic of Kenya, 2005b). KESSP is based on the rationale of the overall policy goal of achieving Education for All (EFA) and the Government's commitment to the attainment of Millennium Development Goals (MDG).The broad objective is to give every Kenyan child the right to quality education and training no matter his or her socio-economic status. In addition the government is to enhance the quality of teaching, learning and quality performance in KCSE examinations. To ensure appropriate outcomes in KCSE examinations, teaching will be monitored and emerging issues addressed to ascertain that the prevailing unit costs achieve desired results in KCSE examinations. KESSP confirmed that teaching should be monitored and

emerging issues addressed to ascertain that the prevailing school unit costs achieve desired results in KCSE examinations. KESSP, however, has not carried out evaluation to determine whether the prevailing school unit cost has achieved the desired outcome in KCSE examination. The present study sought to fill this gap by determining whether the prevailing school unit costs has any effect on KCSE examination performance in public secondary schools in Vihiga Sub-County.

The formal secondary education in Kenya caters for the age group of 14-18 years within the school. This sub-sector consists of over 7,297 secondary schools with a total student population of about 1,770,000 (Republic of Kenya, 2012). However, the massive increase in enrolments in primary schools, following introduction of Free Primary Education (FPE), is already putting pressure on the secondary school system to expand access. The immediate challenge of secondary education is therefore to expand access at low cost while improving quality, which is measured by performance of Kenya Certificate of Secondary Education (KCSE) after four years (Republic of Kenya, 2005b). According to Republic of Kenya (2005b), the government will provide education services based on the school unit costs at all levels. The report by (Republic of Kenya, 2005b), however, did not put measures to evaluate whether quality education is being achieved with the present school unit costs. The present study therefore sought to fill this gap by establishing whether the school unit costs have any effect in students' performance in KCSE examinations in the public secondary schools in Vihiga Sub-County.

The expansion of schools system in Kenya has led to increase of the budget allocated to education as shown in Table 1.1

Table 1.1**: Education Expenditure in Kenya, 2014-2018 (KShs. Millions).**

Year	Recurrent account	Development account	Total
2014/15	261,546.11	22,618.78	284,164.89
2015/16	280,322.75	14,608.41	294,931.16
2016/17	294,707.12	20,871.55	315,578.67
2017/18	385,239.82	30,040.95	415,280.76

Source: The National Treasury, 2018

Table 1.1 presents total expenditure by Ministry of Education (MOE) for the period 2014/15 to 2017/18. Total expenditure increased by 31.6% from KSh. 315.6 billion in 2016/17 to KSh. 415.3 billion in 2017/18. This increase is attributable to funding of Free Primary Education (FPE), Free Day Secondary Education (FDSE) and Teachers' salaries. Despite introduction of FDSE, parents are still expected to pay other levies such as mock examinations, boarding fees, development funds, Parents Association (PA) fees, transport fees, Lunch, uniform and bus fund (Jagero & Ayodo, 2009). The increase in education expenditures leads to increase in teacher unit costs and non-teacher (recurrent expenditure per academic year per student). Despite heavy expenditure on education especially through teachers' salaries, little attention has been given to teacher unit cost and its effect on students' performance in KCSE examinations in public secondary schools, a gap the present study sought to fill.

Ayot and Briggs (1992) observed that there is a trend of poor results in education especially in relation to the resources allocated to it. According to Ayot and Briggs (1992) parents who are vested with the responsibility of providing school facilities such as science equipment, textbooks and physical structures are of the view that teachers should perform better at their present levels of salaries, education and experience. They are of the view that, input-output studies should be done in schools using learning achievement as seen from students' examination performance.

According to Republic of Kenya (2005a), the bulk of government subsidies are in the form of salaries and allowances for teachers. This has left the burden of financing non-teacher recurrent expenditure on individual schools and parents hence variation in non-teacher unit costs. The study by Ayot and Briggs (1992) suggests that input-output studies should be done in schools using learning achievement as seen from students' examination performance. The present study sought to fill the gap by establishing whether there is any effect of non-teacher unit costs on students' academic performance in KCSE examinations in Vihiga Sub County.

To control recurrent expenditures, the government introduced fee guidelines for secondary schools. The government also established new staffing norms and used these to deploy the current stock of teachers to schools based on Curriculum Based Establishment (CBE) but aiming at a minimum student-teacher ratio and contact load of between 34.5-45 lessons per week. According to Republic of Kenya (2005a), Gross Enrollment Rate (GER) for secondary schools declined from 29.4 percent to 22.2 percent between 1990 and 2000. The decline in secondary school enrollments over that period had been caused by high costs, (The average annual unit cost for secondary education is 5 times higher than in primary education) and poverty, with an estimated 30 percent dropout rate due to this factor alone. From 2008 to 2011, GER increased from 42.5percent to 48.8 percent. This could be attributed to the pupils who benefited from FPE and FDSE among other factors (Kenya National Bureau of Statistics, 2012). However, school unit cost has been increasing over the years but not in tandem with academic performance. The present study sought to fill this gap by finding out whether there is any effect of school unit cost on students' performance in KCSE examinations in public secondary schools in Vihiga Sub County.

To alleviate the effects of poverty, the government has initiated funding to secondary schools through bursary for the bright and needy students and FSE (Njeru & Orodho, 2003a). Other factors which caused decline in enrollment include; high cost of learning and teaching materials, school uniforms, transport and development levies, and extra expenses for private tuition, unfriendly school environment and negative effects of HIV /AIDS pandemic and rising repetition rates**.** According to (Republic of Kenya, 2005a), the costs of secondary education in boarding schools are higher than day schools by more than 50 percent creating variation in unit costs yet the schools are characterized by poor performance in national examinations. The present study sought to fill this gap by establishing whether there is any effect of school unit cost (school recurrent expenditures per pupil) on academic performances in KCSE examinations in public secondary schools in Vihiga Sub-County.

Table 1.2 presents national KCSE mean score in 2012 and 2013. The approved government non-teacher unit cost in county boarding schools is KSh. 41,574 according to Mwiria (2014). However, the study noted that schools seek approval from parents through their representatives (Parents' Association Committees) before approaching County Education Officers to ratify charging extra education levy. The extra school levies increased the non-teacher unit cost to KSh.54,523(Mwiria,2014).

Table 1.2**: National KCSE Mean Score, 2012-2013**

Top 10 public Schools, KCSE results 2013				**Top 10 public Schools, KCSE results 2012**			
No	**School**	**Mean Score**	**Category**	**No**	**School**	**Mean Score**	**Category**
1	Alliance High	A -	National	1	Alliance High	A -	National
2	Precious Blood Riruta	A -	County	2	Kenya High	A -	National
3	Kapsabet Boys	A -	National	3	Alliance Girls	A -	National
4	Maseno Schools	A -	National	4	Maranda High	A -	National
5	Molo Academy	A -	County	5	Loreto Limuru Girls	A -	National
6	Chavakali Boys	A -	National	6	Moi Girls Eldoret	A -	National
7	Mary Hill Girls	A -	National	7	Precious Blood Riruta	A -	County
8	Kenya High	A -	National	8	Molo Academy	A -	County
9	Muranga High	A -	National	9	Starehe Boys	A -	National
10	Nairobi School	A -	National	10	Kapsabet Boys	A -	National

Source: http://www.advance_africa.com/KCSE_results

Table 1.2 shows that KCSE results of national schools have taken 80 percent of top ten best schools from 2012-2013. In East African Standard (2003), the Minister for Education noted that the schools that perform well in national exams have adequate facilities and quality human resources. The task force on escalating school fees report by Mwiria (2014), recommended that the government should; legalize school fees, develop school financial management system, bursaries to be done by schools, books to be bought from orange book guided by Ministry of Education (MOE), balancing of CBE and Enrollment Based Establishment (EBE), day schools to charge Kshs.13,708 as opposed to current Kshs.25,374; boarding school to charge Kshs.41,574 from Kshs.54,523 and national schools to charge Kshs. 62,544 from Kshs.100,000**.** It can be noted from the report that the variation in fees charged in schools lead to variation in non-teacher unit costs. It is not yet known whether the variation in non-teacher unit costs is the cause of difference in academic performance in different schools across the country. The present

study therefore sought to fill this gap by establishing whether there is effect of non-teacher unit cost on academic performance in KCSE examination in public secondary schools in Vihiga Sub-County.

The KCSE examination results for Vihiga County from 2010-2013 were presented in Table 1.3 to show the comparison among the four sub counties, that is, Vihiga, Hamisi, Sabatia and Emuhaya sub county.

Table 1.3**: Vihiga County, KCSE Sub-County Mean Score, 2010-2013**

KCSE Mean Score				
Year	**Vihiga Sub-County**	**Hamisi Sub-County**	**Sabatia Sub-County**	**Emuhaya Sub-County**
2010	5.396	5.382	5.250	5.350
2011	5.874	5.230	5.345	5.360
2012	4.887	5.452	5.422	5.466
2013	5.285	5.552	5.650	5.570
Mean	5.361	5.404	5.417	5.437

Source: Vihiga County Education Day, 2013

Table 1.3 shows that Vihiga Sub County has KCSE mean score of 5.361 (C-) which is below the KCSE mean score for the other sub counties within the same county. The low KCSE has been a concern to stakeholders despite the financial investment by government and households.

Table 1.4 presents KCSE mean score of public secondary schools in Vihiga sub county from 2010-2013

Table 1.4: Vihiga Sub-County Public Schools KCSE Mean Score, 2010-2013

No	School	Category	2013	2012	2011	2010
1	Vihiga high	County	7.924	6.692	6.487	6.911
2	St. Clares Girls	County	6.921	7.306	6.735	6.482
3	Mudavadi Girls	County	6.720	5.496	5.855	5.539
4	Madira Girls	County	5.882	5.737	5.016	4.933
5	Ideleri Sec.	S/County	5.284	4.390	4.635	5.471
6	Mbihi Sec.	S/County	5.208	4.131	5.154	4.617
7	Chavavo Sec.	County	5.167	4.809	5.191	5.700
8	Chango Sec.	S/County	5.134	5.378	5.610	5.980
9	Vigina Sec.	S/County	4.753	4.608	4.637	4.263
10	Womulalo Sec.	S/County	4.667	3.645	3.774	4.065

Source: Vihiga Sub-County Education/Awards Day, 2013

Table 1.4 shows that in 2013, 80% of County schools in Vihiga Sub County scored KCSE mean of above 5.50 while 100% of Sub county schools scored KCSE mean of below 5.50. County and Sub County schools charge different school fees depending on government fee guidelines. The differences in school fees from parents and government subsidy results in variation in school unit costs. Despite the fact that finances have been invested in the schools by the parents and the government through school fees and teachers' salaries, the KCSE performance has been below the average Mean Score 6 (C) in Vihiga Sub County. According Republic of Kenya (2013a), Vihiga Sub-County Director of Education pointed that Grade "A" has been elusive for the past four years. The number of university qualifying grades was 433 in the year 2012 down from 443 in the year 2011 indicating a deviation of -10. Furthermore, there is no available information concerning school unit costs, non-teacher unit costs and teacher unit cost and its effect on KCSE

examination performance in the Sub-County**.** This study therefore sought to fill this gap by examining the effect of education unit costs in public secondary schools in Vihiga Sub County.

1.3 The Statement of the Problem

Students' performance in KCSE examination has been of much interest to parents and education stakeholders. The parents prefer to send their children to schools that perform well in KCSE examination. The schools that have invested heavily in inputs such as textbooks, past examination papers, equipment and human resources tend to perform well at KCSE examinations.

Vihiga Sub-County's performance in KCSE examinations has been unsatisfactory compared with other Sub-Counties in the County as shown in Table 1.3. The individual schools have shown mixed performance in KCSE examinations. For example, from 2010 to 2013, the top five schools in the Sub-County's KCSE ranking have been dominated by the County Schools and only one Sub-County school as shown in Table 1.4. The bottom five schools in the Sub-County's KCSE ranking have been Sub-County schools. According to MOE fee guidelines, day secondary schools, boarding secondary schools and special secondary schools, non-teacher unit costs are KShs. 22,224, KShs. 66,424 and KShs. 69,810 respectively. However, the observation is that many schools charge additional levies besides the MOE recommended fee guidelines. The extra levies charged in schools, coupled with teachers' salaries lead to increase in education unit cost. Non-teacher unit cost in sub county schools is KSh.25,374 while non-teacher unit cost in county schools is KSh. 41,574. It is noted that schools in Vihiga Sub-County charge extra levies besides the MOE recommended fee guideline. The extra levies and teachers' salaries' lead to increase in

education unit cost yet the Sub-County still has low KCSE Mean Score of 5.361 (C-) which is below the average KCSE Mean Score of 6(C). This study therefore sought to examine whether there is any effect of unit costs on students' performance in KCSE examinations in public secondary schools in Vihiga Sub-County.

1.4. Purpose of the Study

The purpose of this study was to determine the effect of unit costs on students' performance in KCSE examination in public secondary schools in Vihiga Sub-County, Kenya.

1.5 Objectives of the Study

The specific objectives were to:

(i) Establish the effect of teacher unit costs on students' performance in KCSE examinations in public secondary schools in Vihiga Sub-County.

(ii) Determine the effect of non-teacher unit costs on students' performance in KCSE examinations in public secondary schools in Vihiga Sub-County.

(iii) Establish the effect of school unit costs on students' performance in KCSE examinations in public secondary schools in Vihiga Sub-County.

1.6 Research Hypotheses

The following research hypotheses guided the study.

Ho_1 There is no significant effect of teacher unit costs on students' performance in KCSE examinations in public secondary schools in Vihiga Sub-County.

Ho_2 There is no significant effect of non-teacher unit costs on students' performance in KCSE examinations in public secondary schools in Vihiga Sub-County.

Ho_3 There is no significant effect of school unit costs on students' performance in KCSE examinations in public secondary school in Vihiga Sub-County.

1.7 Significance of the Study

This study is significant in that it gives valuable information to Educational Planners and Administrators that teacher salary (Teacher Unit Costs) alone may not improve students' performance in KCSE examinations in public schools in Vihiga Sub-County. Salary increment for teachers may not translate to improved performance unless accompanied by other incentives such as motivation money and grade promotions. The study also provides Education Planners and Administrators with information that non-teacher unit costs which consist of students' fee payment in schools may lead to improvement in students' performance in KCSE examinations. This information may also assist in arriving at adequate amount of fees each student should pay for improved performance in KCSE examination in public secondary schools. The information from this research may also assist Education Planners and Administrators in arriving at an appropriate school unit cost, the amount of money to be spent on each student per academic year for improved performance in KCSE examination in public secondary schools in Vihiga Sub-County.

1.8 Conceptual Framework

This study was based on a conceptual framework (Figure 1) which demonstrates the interrelationship between the dependent, intervening and independent variables. In this conceptual

framework, it is posited that students' performance in examination is influenced by teacher unit costs, non-teacher unit costs and school unit costs. If teacher unit costs, non-teacher unit costs and school unit costs are favorable then students' performance in KCSE examination will improve in performance index. If the unit costs are unfavorable then the students' performance index in KCSE will decline. The intervening variables which can be manipulated include Government Policy through Ministry of Education (MOE) and Teachers Service Commission (TSC). The MOE through government policy is responsible for appointment of Board of Management (BOM). BOM administers and manages the resources of the institution. It also receives collects and account for any funds accruing to the institution (Republic of Kenya, 2013c). The TSC is mandated to register trained teachers, recruit and employ registered teachers; manage the payroll of teachers in its employment (Republic of Kenya, 2015). In this study it was assumed that the schools BOM have good management skills hence they can carry out proper budgeting and utilization of school learning and teaching resources. It was also assumed that TSC has employed qualified and experienced teachers and the Government through MOE gives fees guidelines to schools.

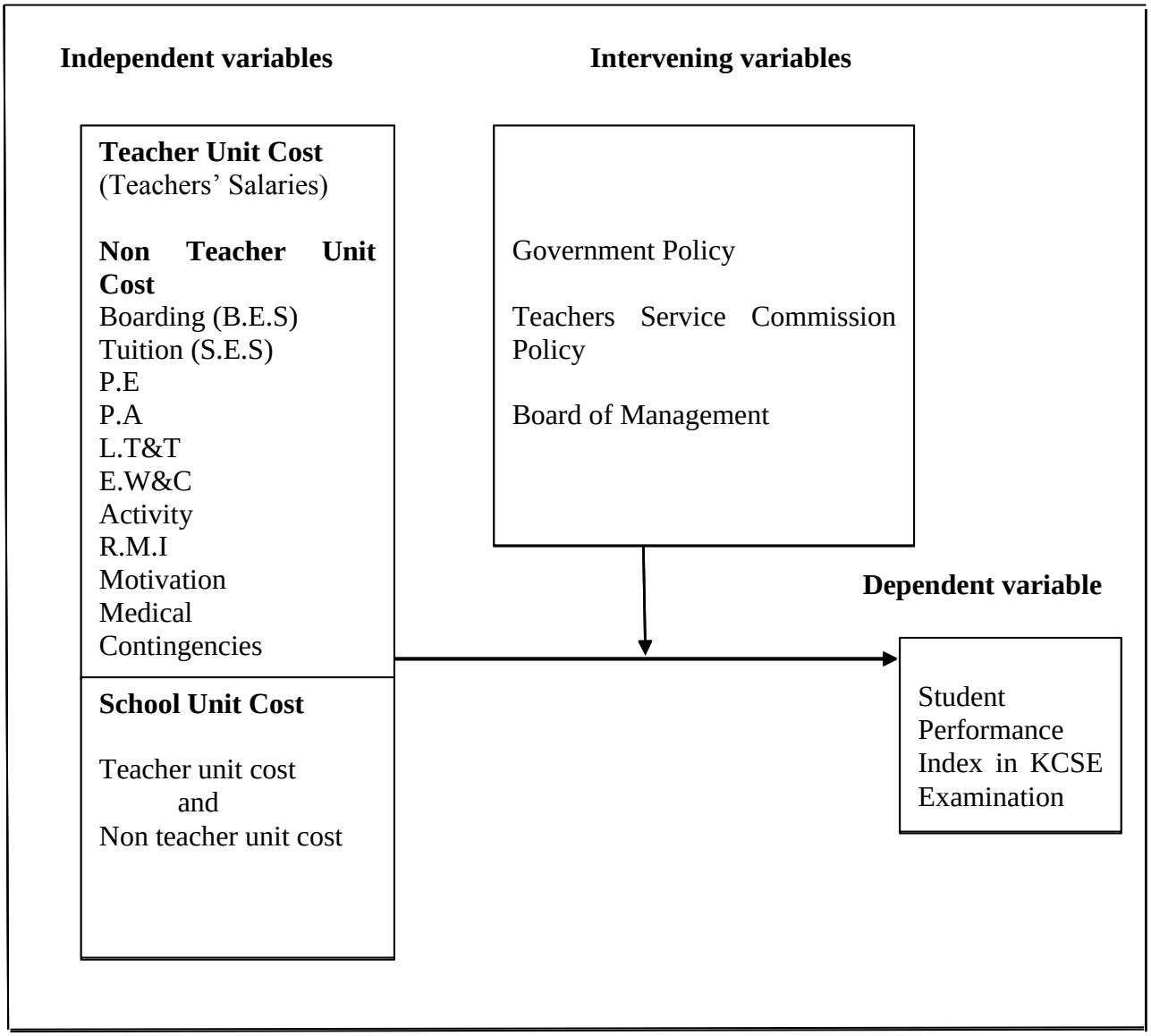


Figure 1.1: Conceptual Framework of unit costs and students' performance in KCSE

1.9 The Scope of the Study

This study focused on educational unit costs and performance in KCSE examinations covering 2010-2013. The year 2010 marked a time when Kenya promulgated a new constitution. It covers the period 2010-2013 with the purpose of comparing and effectively analyzing the effect of

educational unit costs and KCSE examination performance after the new constitution. The study was specific to Vihiga Sub-County Public Secondary Schools due to limited time and financial resources. Furthermore, Vihiga Sub-County is representative of sub counties in Vihiga County; hence the findings of the study may be generalized for the rest of the County.

1.10 Limitations of the Study

Issues of salaries and finances are always treated as confidential matters. It was challenging to confirm salaries of certain teachers in the Sub-County since some teachers regarded their earning as private and confidential. Some teachers even became suspicious as to why research instrument was being administered to them. It was even more challenging for some respondents to remember how much they earn. Some school head teachers were also suspicious whether the financial records may be used against them.

To overcome these challenges, information on teacher's salary, school's income and expenditure were collected by triangulation method. This was done by using document analysis on TSC circulars on salary awards 2010-2013, administering teacher's questionnaire to the teacher concerned and also including teacher's salary information in Head teacher's questionnaire. The school fees structure 2010-2013 was also collected from school head teacher. The cost of boarding in boarding schools inflated the non-teacher unit cost in those schools. It was therefore necessary to categorize schools into boarding and day schools. The schools were further categorized into County and Sub-County schools so that variation in school size, class size, students' entry behavior and students' socio-economic background would not affect the study.

1.11 Assumptions of the Study

The study was based on the following assumptions; KCSE examination is a standard measure of students' academic performance in secondary schools; Expenditure in schools varies with the category of school that is national, county or Sub-County secondary school within Vihiga Sub-County; Teachers Service Commission pays teachers' salaries; head teachers have adequate management skills and there is proper budgeting and proper utilization of resources in the schools and teachers are trained; the respondents were cooperative and gave voluntary accurate information; all respondents were objective and accurate when filling the questionnaires.

1.12 Definition of Terms

Academic achievement: This is performance in a standard national examination such as KCSE as measured by attainment of Mean Score index of 1-12.

Development expenditure: This is money allocated for construction of classrooms, dormitories, laboratories, offices and buying of land.

Effect: It refers to change occurring in students' academic performance as a result of action by unit costs.

Internal efficiency: It refers to the maximum use of resources allocated to achieve the internally laid down objectives or best use of resources and operating in a cost effective manner.

Non-teacher unit cost: This is Non-teacher expenditure which consists of school fees paid by parents and government subsidy in a given academic year divided by students' enrollment.

Recurrent expenditure: This is money allocated to teachers' salaries, acquisition of learning materials like books, repair and maintenance of buildings and equipment, administration and transport.

School unit cost: This is the sum of Teacher Unit Cost and Non-teacher Unit Cost in a given academic year.

Teacher unit cost: This is teachers' salaries in a given academic year in each school divided by students' enrollment.

Unit cost: This is the ratio of recurrent expenditure per academic year divided by the number of students enrolled in each school in the Sub-County.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This literature review highlights some studies on the state of unit cost in developed and developing countries, teacher unit costs and students' academic performance, non-teacher unit costs and students' academic performance and school unit costs and academic performance in secondary schools.

2.2 The State of Unit Cost in Developed and Developing Countries

Statistics on unit costs are an important guide to policy makers. Particularly important are unit costs by level of education (i.e., preschool, primary, secondary and tertiary), though sometimes statistics are also needed for particular subjects (e.g. science or language), for different streams (e.g., academic or technical), and for different parts of a country (e.g., provinces) (Bray, 2002). Unit Cost Analysis is important in establishing what actually constitutes any form of investment. Education as an investment good comprises of certain costs that go into teaching and learning. Studies by Bray (2002) confirm that unit costs (input) is a measure of education investment. It is therefore expected that any investment in education must yield returns (output). At the public secondary school level returns to education (output) is measured in terms of KCSE results. The present study sought to investigate if education investment in the form of unit cost does indeed affect KCSE performance in public secondary schools in Vihiga Sub- County.

According to Bray (2002), Unit Cost constitutes the costs of school space occupied by a single student at any given point in time for instance one year. Although this definition does not cover

much on the quality of teaching and learning processes in classroom, it gives important indication in terms of attendance and amount of resources. According to Chesswas (1969), educational unit costs should rightly be headed unit expenditures because it deals only with actual expenditure of funds directly on the educational services. It has, however, become usual to use the phrase unit costs. The unit cost commonly used is the cost per student. For recurring costs this means annual cost per student enrolled, which may be modified by use of average attendance if attendance is normally poor. The teacher unit cost in the recurring costs is so important that changes in the salary profile of the teaching force can make an appreciable difference to the cost of running educational services, and even when the cost per student is used, the teacher unit cost within it has to be calculated on the basis of the total teacher costs made up according to salaries**.** The studies by Bray (2002) and Chesswas (1969) recognized unit costs as important education investment. However, the studies did not find out the contribution of unit cost to academic performance. The present study sought to fill this gap by finding out if education investment (unit costs) has any effect on students' performance in KCSE examinations

From methodological point of view the important thing about recurring unit costs is not so much its total but rather the behavior of the elements which go to make it up, because factors which cause changes in it usually do not affect all its elements (Chesswas, 1969, Gravenir, 2006). It is generally agreed that teacher unit cost being usually the largest should be separated; likewise it is obviously necessary to separate the cost of boarding element in boarding schools (Chesswas, 1969). It is also important to carry out costing in education institutions .Costing of education is the process of establishing unit cost of education at various levels. In establishing the unit costs, it is assumed that for a given level of education, the objectives, strategies and detailed activities

have been clearly specified. The unit cost approach helps to inject realism into the allocation and mobilization of resources, which is a necessary step if desired quantitative growth and qualitative improvement are to be achieved. The studies by Chesswas (1969) and Gravenir (2006) confirm the importance of unit cost in allocating resources in education institutions and its corresponding qualitative improvement. However, the studies did not investigate the contribution of unit costs on academic performance. The present study sought to fill this gap by investigating whether there is any effect of unit costs on students' performance in KCSE examination in Vihiga Sub-County**.**

Although some studies on the country's education system and Kenyans in general have urged for the adoption of the unit cost approach as the modus operandi (Owino & Abagi, 2000), the financial planning of education particularly at the school level continues to be characterized by inefficient practices which, by separating the allocation of state resources, fail to address the issues of equity, efficiency and effectiveness. A clear example is at the public university where the current unit cost of Ksh.120, 000 used to allocate funds to universities is a historical figure and no longer represents an accurate picture of the average of the cost of educating a student at that level and its academic outcome (Republic of Kenya, 1999). Several studies (Bray, 2002; Chesswas, 1969; Gravenir, 2006; Owino and Abagi, 2000; Republic of Kenya, 1999) outlined the importance of unit costs in financial planning of education in schools. However, none of them has carried out research on the effects of unit costs on students' KCSE performance in public secondary schools. The present study sought to fill this gap by shedding more light on the effectiveness of educational investments by examining whether there is any effect of unit costs on students' performance in KCSE examinations in public schools in Vihiga Sub-County.

2.3 Teacher Unit Costs and Students' Academic Performance in the World

Any attempt to reduce education costs is bound to focus on teachers' salaries initially, since they represent at least 70 percent of the total current costs of education in many developing countries and more than 90 percent of the current costs of primary education (Psacharopoulos and Woodhall, 1985). World Bank (1988) carried out studies in Sub-Saharan Africa to reduce unit cost in order to expand provision for education and improve performance. In Burkina Faso, the relative high cost of teachers' salaries made it difficult to reduce unit costs. Restructuring the primary teacher corps and improving internal efficiency through better-focused training therefore effected lowering of unit costs.

The chief determinant of unit cost is teachers' salaries, which account for 80-90 percent of the recurrent budget (Noor, 1981). The teachers' salaries the study noted, should not be singled out as a means of reducing costs but should be assessed according to the total salary structure of civil servants and government officials. One method of reducing teachers' costs is to increase student-teacher ratio. The other method is use of local resources such as cooperatives, and trade unions, the study noted. Numerous studies have shown that teacher pay based on degrees and experiences is unrelated to teacher effectiveness, hence performance (Hanushek, 2013). Gravenir (1991) observed that periodical increase in teachers' salaries, which take a big slice of recurrent expenditure, is another factor to be looked into. The studies by Hanushek (2013) noted that teachers' salaries (teacher unit cost) are not related to performance. The present study went further to determine whether there is any effect of teacher unit cost on students' academic performance in secondary schools in Vihiga Sub-County.

According to OECD (2004), expenditure on education is an investment that can help foster economic growth, enhance productivity, contribute to personal and social development, and reduce social inequality. The proportion of total financial resources devoted to education is one of the key choices made in each country by governments, enterprises and individual students and their families alike (OECD, 2004). Expenditure per student is an indicator of the investment made by countries in each student at the different levels of education. Expenditure on education per student at each level of education is obtained by dividing the total expenditure on educational institutions at that level by the number of full-time students. Only educational institutions and programmes are taken into account for which both enrolment and expenditure data are available (OECD, 2004).

According to UNESCO (2004) and UNESCO (2006), secondary education public expenditure per student increased across major regions of the world. This reflects the importance countries attach to education. In Africa, Burundi has the largest allocation per student; in North America and Western Europe, Norway has the largest allocation per student while Indonesia has the least allocation. Total public expenditure on education also varied with Indonesia having least public investment in education while Malaysia has highest public investment in education.

Teachers' salaries are typically the single biggest component in the education budgets of low income countries, often accounting for 75% of total education spending (UNESCO, 2009). Levels of teacher pay will therefore be a key factor in the overall costs of achieving EFA. Stephanie (2002) observed that students performed better when taught by teachers who had more than ten years' experience or who were comfortable with the curriculum.

The studies by Noor (1981), UNESCO (2004), UNESCO (2006), UNESCO (2009) and World Bank (1988) mainly outlined education expenditures and teacher salaries in different countries. The issue of performance was not exhaustively discussed nor was teacher unit costs compared with performance in examinations. The present study sought to fill this gap by establishing whether there is any effect of teacher unit cost on students' academic performance in KCSE examination, public secondary schools in Vihiga Sub-County.

According to Oguntoye (1978), recurrent expenditure per pupil (the bulk of which was teacher expenditures) and non-teacher expenditure per pupil (measuring the quality of other personnel, books and equipment) make positive and significant contributions to exam performance when other variables are held constant. Teacher qualification, average teacher salaries and proportion of boarders in schools make positive and significant contribution to examination performance when other variables are kept constant. Holding other variables constant student-teacher ratio has negative but significant relationship with exam performance. Whereas study by Oguntoye (1978) analyzed examination results for a period of one year in Ogun State of Nigeria, the present study sought to analyze examination results for a period of four years in Vihiga Sub-County and establish the effect of teacher unit cost on students' performance in KCSE examination in Vihiga Sub-County.

Republic of Kenya (2005a) laments that large part of government expenditure goes towards teachers' salaries. Teachers' Personal Emoluments as percentage of Ministry of Education recurrent budget rose from 77.4 percent in 2008 to 78.8 percent in 2011 (Republic of Kenya, 2012). The study observed that such expenditures on teachers deny pupils ability to buy text

books and equipment. Salaries exert a strong influence on the level of education expenditures (Okoth, 2012). Highly qualified staff poses higher instructional skills. The study found correlation coefficient of 0.500 implying that salaries explained 50% of pupils' performance in KCPE in the study. The study posits that schools whose staffs are well paid are able to retain highly motivated staff who will improve performance. In the study carried in primary schools in Kisumu Municipality, most teachers received between Ksh 200,000-500,000 gross annual salaries. A few received Kshs.600,000-700,000. The study by Okoth agrees with Eshiwani (1993) who argues that quality of education as well as pupil achievement depends on the teacher and a teacher who is paid well gives better results.

Agwanda (2002), however, posits that poor results in public primary schools are as a result of poor training of teachers and experience rather than remuneration. Whereas the previous studies were done among the primary school teachers, the present study was carried among secondary school teachers. The present study also went further to find out whether there is effect of teacher unit cost on students' performance in KCSE examination in public secondary schools in Vihiga Sub-County.

2.4 Non -Teacher Unit Costs and Students' Academic Performance

Studies by Psacharopoulos and Woodhall (1985) noted that determinants of academic achievement demonstrated that variations in inputs do affect educational outputs. Among the most important factors are teachers and text books; others include materials and equipment. According to Psacharopoulos and Woodhall (1985), the studies in Peru revealed that other school variables that have been shown to have effect on student achievement are physical facilities such

as libraries, visual aids and basic equipment such as tables and chairs. The study by Psacharopoulos and Woodhall (1985) noted the general inputs that affect academic achievement. However, it was general and it did not refer to a particular level of education such as secondary school level. The present study went further to investigate non-teacher unit costs in public secondary schools in Vihiga Sub-County such as School Equipment & Stores (S. E. &S), Personal Emoluments (P.E), Parents Association (PA), Local Travel & Transport (L.T. &T), Electricity, Water & Conservancy (E.W. & C), Activity Fund, Repair Maintenance & Improvement (R. M. & I) and Administration and find out if there is any effect of non-teacher unit cost on students' performance in KCSE examination in public secondary schools in Vihiga Sub-County.

Hijazi and Naqvi (2006) in studies carried in Pakistan observed that performance in examination depends on different factors such as socio-economic, psychological and environmental factors. The study noted that students' performance depends on socio-economic background thus those from affluent families tend to perform better than those from low class. The study by Hijazi and Naqvi (2006) agrees with the much publicized findings of the Coleman Report of 1966 cited by Hanushek (2013). Coleman Report posited that socio-economic factors are more important than school variables in explaining differences in students' academic achievement. The present study, however, sought to determine the effect of non-teacher unit costs on academic performance in KCSE examinations in public secondary schools in Vihiga Sub-County.

A study conducted in South Korea on effect of private educational expenditure on academic performance (Kang, 2007) observed that 10 percent greater monthly expenditure on private

tutoring results in a modest, if any, causal effects on student test performance. Kang argues that monetary educational investments may not always matter in students' educational outcomes. Kang agrees with Betts and Hanushek (as cited in Kang, 2007) who argue that public resources are not an important determinant of student outcomes. Anderson et al. (as cited in Kang, 2007) explains small effect of public educational investment as a result of poor management of educational resources due to large bureaucracies in the public sector. The study by Kang (2007) was aimed at private expenditures and did not involve public expenditures. The present study therefore sought to fill this gap by finding out whether there is any effect of non-teacher (public expenditures) on students' academic achievement in KCSE examination in public secondary schools in Vihiga Sub-County.

Lewin (2008), in a study carried out in Sub-Saharan Africa, states that in all of the poorest countries, textbooks and other curricular materials are widely unavailable or in short supply; much learning takes place without access to any printed material. Non salary budget allocations to provide learning materials and improve textbook quality are often derisory. The study argues that underfunding of learning could lead to low achievement. Houtenville and Conway (2007) in the USA reveal that the educational achievement of children has long been the focus of public policy—stemming in part from the public goods nature of education. These policies have taken the form of funding, providing, and regulating educational services. The production of educational outcomes is the focus of extensive, multidisciplinary research—focusing on the role of various inputs, including characteristics of the school, teachers, peers, and households. Central to this literature is the debate over whether improving school financial resources—the input that public policy can readily adjust—will improve student achievement, and if not, why not? Lewin

(2008) argues that underfunding of learning could lead to low academic achievement while the study by Houtenville and Conway (2007) is asking whether improving school financial resources—the input that public policy can readily adjust—will improve student achievement, and if not, why not? The present study sought to fill this gap by finding out whether there is any effect of non-teacher unit cost on students' academic achievement in KCSE examination in public secondary schools in Vihiga Sub-County.

Betts and Hanushek (as cited by Kang, 2007), Hijazi and Naqvi (2006), Houtenville and Conway (2007) and Stephanie (2002) present differing arguments about school financial resource input and students' academic achievement. These studies have spawned a debate around whether financial resources influence student achievement; notably summarized by Hanushek (2013), who finds a negligible and perhaps even negative effect, and Hedges and Greenwald (1996) and Krueger (2003) who find positive effects. Research done in Nigeria, by Fabunmi, Brai-Abu, and Adeneji (2007), revealed that class factors like class size, student classroom space and class utilization rate when taken together, significantly affect secondary school student academic performance. The present study went further to establish if there is any effect of non-teacher unit cost on students' academic achievement in KCSE examination in public schools in Vihiga Sub-County.

According to Republic of Kenya (2005a), the average government spending on education and training has ranged between five and seven percent of GDP. At the national level, recurrent government spending on education has been higher than any other social sector expenditure-73 percent of the social sector expenditure as shown in figure 2. In addition, education's recurrent

budget has risen from 35 percent of public sector recurrent budget in 2000 to 39 percent in 2004, with about 79 percent going towards administration and planning .Out of 79 percent, 86 percent goes towards salaries and wages. Furthermore, out of the total allocation to the MOES&T, 50 percent of the resources go to primary education, with about 85 percent of the fiscal resources to primary schools being used to pay teachers' salaries.

Also development expenditure has increased since 2003 as a result of implementation of the free primary education (FPE) leaving little allocation to other sub-sectors (Republic of Kenya, 2005a). At the household level, the average student cost for secondary education is Kshs.25, 900 for boarding school and Kshs.10, 500 for a day school. According to Lewin (2006) the two largest cost elements in most secondary school systems in Sub-Saharan Africa are boarding and teachers' salaries. However, the costs can be classified into teachers' salaries, non-teaching salaries and non-salary operating costs. Teachers' remuneration takes up half of or more of costs per pupil in most non-boarding secondary school systems. Non-teaching salary costs refer to the cost of remunerating the non-teaching staff which includes salaries of administrators, clerical assistance, hostel wardens, maintenance staff and security. The present study went further to fill this gap by finding out whether non-teacher unit cost has any effect on students' academic achievement in KCSE examination in public schools in Vihiga Sub-County.

A study by Olel (2000) on optimal utilization of educational resources in secondary schools in Kisumu County found out that student-teacher ratio, non-teacher recurrent expenditure, teacher qualification and teacher salary were among the independent variables that largely influence recurrent expenditures per student. The study reflected previous research by Oguntoye (1982)

and Wolff (1984). These studies by Oguntoye (1982), Olel (2000) and Wolff (1984), however, did not attempt to link recurrent expenditures to students' performance in national examinations. The present study sought to fill this gap by finding out the effect non-teacher recurrent expenditure (non-teacher unit cost), on students' performance in KCSE examinations in public secondary schools in Vihiga Sub-County.

In 1988 the government under the structural programmes, implemented the cost-sharing policy in the provision of social services including education (Republic of Kenya, 1988). Although the policy was meant to revitalize planning and management of education, it also created some problems such as, all controls on amount of fees to be charged were removed and currently in all schools, head teachers charge any amount of fee. Government fee guideline is not adhered to. Parents have been left to meet the rest of recurrent costs that include maintenance, physical development, vehicle, electricity, water and other services as well as emoluments for all support staff.

There is also lowered enrolment rates and increased dropout rates. Inequalities in schools are experienced, as regions with nothing to share have been unable to contribute to educational development. A part from tuition and boarding fees, schools demand payment for various items ranging from arbitrary, admission fees to medical fees, library, textbooks, desks, bedding including mattresses, jembes, slashers, pangas, forks, spoons, hockey sticks and the list is endless. These charges flout regulation by MOE. Totally Integrated Quality Education and Training for Unity, Equity and Development (TIQET) therefore recommended fee guidelines to be enforced at Sub-County level (Republic of Kenya, 1999**)**. The report by TIQET recommended

fee guidelines to be enforced at Sub-County level. A review of 2018 fee structures for numerous public secondary schools shows some are still charging medical and insurance fees as well as a charge for teaching, learning materials and exams. According to Onyango and Otieno (2017), the government raised the annual subsidy for each pupil from Ksh. 12, 870 to Ksh. 22,244 to ensure FDSE as it absorbed the Ksh. 9,374 that parents were required to pay. Due to the increased capitation, parents are required to pay maximum of non-teacher unit cost of Ksh. 53,554 in National schools and non teacher unit cost of Ksh. 40,535 in Extra County schools. However, effect of the non-teacher unit cost (the fees charged) on performance in national examinations has not been established. The present study sought to fill this gap by finding out whether there is any effect of non-teacher unit cost on students' academic achievement in KCSE examination in public schools in Vihiga Sub-County.

The study by Ngala as cited in Sika (2003) observed that recurrent expenditure in Homabay and Migori Counties per trainee had an inverse relationship with enrollment. A study by Sika (2003) in Siaya County revealed that a general rise in the cost of items in secondary schools resulted in an upward trend in recurrent expenditure in both County and Sub-County schools. The study noted that most of Sub-County schools experience financial deficit while most of County schools experience financial surplus. The study found that unit cost is highly correlated to performance with a correlation coefficient of 0.717 meaning that unit cost explained 71.7% of students' performance in examinations in Siaya County schools. The study explained that with more income the schools are able to purchase more learning resources hence improved performance. The study also noted that schools with surplus income perform better than schools with financial deficit. The study, highlighted that students' performance in examinations can be improved if

financial resources are properly utilized. The present study agrees with Sika (2003) in the method of analysis, that is, regression and correlation. However, it sought to establish whether there is any effect of non-teacher unit cost on students' academic achievement in KCSE examination in public schools in Vihiga Sub-County.

Nyaoga (2003) observed that some schools spend very little on school equipment and hence low performance while others spend reasonably high amount on school equipment and this perhaps accounts for better performance. Schools that perform poorly had serious problems of fee payment by parents. Such schools could not afford to buy textbooks for the students. The reverse was however the case in those schools with better performance. Schools that performed poorly lacked laboratories and in other schools students met certain apparatus for the first time in the national examinations. Frequent testing is used in schools that perform well since they can afford to buy Sub-County mocks across the country**.** The findings by Nyaoga (2003) agree with Fuller (1997) and Heinemann (1984) who support the significance of textbooks on performance. The present study, however, sought to find out whether there is any effect of non-teacher unit cost on students' academic achievement in KCSE examination in public schools in Vihiga Sub-County.

Owino and Abagi (2000) observed that lack of policy guidelines from MOES&T on the implementation of cost-sharing have led to, among others, wide divergent in costs applied by schools across and within the region. The schools, the study noted, owing to lack of an appropriate framework, often flout fee guidelines. Even where efforts have been made in computing unit costs, there has been no consensus, and most of the findings lie in shelves. The result has been uncoordinated fee structures most of which reflect arbitrary increases that are

often unjustified. At the moment, direct fees for secondary schools are estimated to vary between Kshs.15, 000-50,000 per annum while indirect costs range from Kshs.2, 000-15,000. In the absence of baseline unit cost of education, many schools have increased fees without justification. The study by Owino and Abagi (2000) did not explore the effect of arbitrary increase of fees for secondary schools on academic performance. The present study, however, went further to fill this gap by examining whether there is any effect of non-teacher unit cost on students' academic achievement in KCSE examination in public schools in Vihiga Sub-County**.**

Studies carried in Kenya on academic performance (Eshiwani, 1993; Jagero, 1999; Mwiria, 1985; Nyaoga, 2003), observed that school size, expenditure on text books and equipment and teacher experience had significant influence on performance. Agwanda (2002), in a study of achievement in Kenya Certificate of Primary Education (KCPE) in Kisumu Town, found out variables such as teacher qualification, head teacher leadership qualities, expenditure on text books and socio-economic background of student have significant influence on academic achievement while student-teacher ratio, teacher experience and teacher salary have negative correlation with performance. There are clashes of opinion regarding effectiveness of non-teacher unit cost and student academic outcomes by education planners, for example (Agwanda, 2002, Jagero, 1999, Mwiria, 2014 and Nyaoga, 2003). This study therefore sought to fill this gap by determining if non-teacher unit cost has any effect on students' performance in KCSE examination in public secondary schools in Vihiga Sub-County.

2.5 School Unit Costs and Students' Academic Performance

World Bank (1988) in studies done in Senegal observed that reducing per pupil costs through double shifts was one way of increasing enrolment and reducing overcrowding in urban schools. The World Bank therefore recommended increasing student-teacher ratio at secondary level by having larger classes, heavier teaching loads and specialization of teachers in several subjects rather than in only one and also by introducing distance education programmes. UNESCO (1994) noted that school unit costs could be reduced further if measures such as increasing student-teacher ratio, operating two or more shifts in crowded schools, using multi grade teaching in sparsely populated areas were used. The study, however, noted that these measures would burden teachers and increase burnout, hence poor teaching conditions and poor results. The studies by World Bank (1988) and UNESCO (1994) were aimed at reducing school unit cost. The studies, however, noted that reducing school unit cost results in poor teaching conditions and hence poor results. These studies were carried in primary level of education. This study went further to find out whether there is any effect of school unit cost on students' performance in KCSE examination in public secondary schools in Vihiga Sub-County.

Wolff (1984) showed unit costs in secondary education average 7 times that of primary education. The study found out that in general as enrolment increases, unit costs decreases since boarding is reduced and teacher supply is increased. The study cited the factors, which affect unit costs as teachers' salaries; student-teacher ratio and non-teacher salary costs especially boarding costs. The study noted that student-teacher ratio of secondary schools in East Africa increased slightly from 21:1 to 22:1. Ethiopia has the highest ratio of 41:1 followed by Comoros 30:1, Kenya 28:1 and DRC 27:1. The other countries with lowest student-teacher ratio are Rwanda

13:1, Sudan 16:1, Burundi 17:1 and Swaziland 18:1.Wolff suggested that teacher utilization can be increased by having 30 lessons per week rather than 24 lessons per week or by reducing the number of class periods to 32 and increasing the length of teaching period to 50 minutes and teachers to teach 24, fifty minute lessons per week. Also the average class size is increased to 40; should saving be made in teacher costs due to the higher student-teacher ratios, consideration should be given to utilizing a portion of the savings to provide teacher support services such as laboratory, library and workshops, assistants, duplicating machines and other teaching aids. The study noted that a school, which devotes a major portion of the curriculum to technical and vocational subjects, could expect a significant increase in unit costs because of inputs for additional teachers as well as consumable materials and electricity. Research by Wolff (1984) noted the factors, which affect unit costs though no attempt was made to relate them with performance, a gap which the present study sought to fill by determining the effect of school unit costs on students' academic performance in KCSE examination in public secondary schools examination in Vihiga Sub-County.

Increasing secondary enrollment within current cost structures is severely constrained (Lewin, 2008). According to the study, typical national budgeting patterns in low-enrollment countries allocate relatively small shares of the education budget to the secondary level. In Ethiopia, Malawi, and Tanzania, secondary education absorbs less than 10 percent of total recurrent expenditure; primary education accounts for 65 percent or more. The study, however, did not examine the effect of low allocation of education budget to students' performance in national examinations. The present study sought to fill this gap by finding out whether school unit cost has any effect on students' academic performance in KCSE examinations in Vihiga Sub County.

According to studies carried by Lewin (2008), public costs per student vary across levels of education. On average, per pupil costs for lower-secondary school are about three times those for primary school, and upper-secondary schools cost about six times as much as primary school. Higher levels of education cost more because of lower PTRs, higher salary costs, boarding subsidies, and larger numbers of non-teaching support staff, which can account for 40 percent of total costs per pupil. In systems with high enrollment rates, the ratio of the unit cost in secondary school to the unit cost in primary school is low. Countries with high secondary-school enrollment tend to spend less than twice as much on secondary-school students as on primary-school students. All OECD countries with high GER spend less than twice as much per student in secondary school as in primary school. The study by Lewin (2008) gave some information about unit cost and enrollment. It, however, did not show how the education unit cost in Sub-Saharan countries relates with performance. The present study went further to find out if there is any effect of school unit cost on students' academic performance in KCSE examinations.

A study by Okoth (2012) on unit costs and pupils' performance in KCPE examination in Kisumu Municipality primary schools revealed that school unit cost is determined mainly by teachers' salaries, salaries of non TSC employees and pupil/teacher ratio. The study posited that the lesser pupils there are per teacher, the higher the cost per pupil. Therefore by increasing the class size or paying teachers better one still meets the objective of spending the same amount on a pupil in a cost effective way. The study found out that in Kisumu Municipality, parents in primary school spend between Kshs. 20,000-100,000 annually to educate their children. The study found a correlation between school unit cost and pupils' performance in KCPE examinations**.** The present study agrees with Okoth (2012) in the research design, that is, correlation. However, the

study by Okoth was done in public and private primary schools. The present study went further to carry out the study in public secondary schools to determine whether school unit costs has any effect on students' academic performance in KCSE examination in public secondary schools examination in Vihiga Sub-County.

Eshiwani (1993) observes that, internal efficiency is improved by increasing the student-teacher ratio. The study argues that large classes release funds for much needed textbooks and equipment. The research noted that marginal increase of average class size might not affect student performance. According to Njeru and Orodho (2003b), all provinces, except North Eastern, showed low student-teacher ratios in decreasing order, were found in North Eastern (23:5), Western (17:4), Nyanza (16:7), Rift Valley (16:7) and Central (16:5) with lowest student-teacher ratios in Nairobi, Coast and Eastern (11:5, 15:4 and 15:7), respectively. The national student-teacher ratio was 15:1; while the student- trained teacher ratio was 16:3. Low student-teacher ratios allow better and more individualized teaching and learner supervision. But commitment to very low student-trained teacher ratios, for example below 20 students per teacher, results in increased secondary unit cost. The studies by Njeru and Orodho (2003b) noted that increasing the student-trained teacher ratio would be desirable, to enable more students to access secondary school education with minimal secondary unit costs. The issue of performance was, however not addressed. The present study went further and sought to fill this gap by establishing the effect of school unit costs on students' performance in KCSE examination in public secondary schools in Vihiga Sub-County.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This section describes research design, the area of study, study population, sample and sampling procedure, instruments of data collection, validity and reliability of the instruments, data collection procedure, ethical considerations and data analysis procedure.

3.2 Research Design

The research designs chosen were ex post facto, correlation and descriptive survey. According to Fraenkel and Wallen (2003), ex post facto is a systematic, empirical inquiry in which, the researcher does not have direct control of the independent variable because their manifestation has already occurred. According to Kothari (2004), the aim of ex post facto research design is to determine reasons or cause for the current status of the phenomena under study. The events in this research are performance in KCSE examination and unit costs, which have already occurred by the time the researcher, visited the areas of research. Descriptive survey was used because it sought to obtain information that described existing phenomena by asking individuals about their perception, attitudes, behavior or values. According to Kombo and Tromp (2006), descriptive survey is a method of collecting information by interviewing or administering a question to a sample of individuals. Correlation study was used because it compares two or more different characteristics from the same group of people (Kumar, 2005). Correlation design was used to compare teacher unit cost, non-teacher unit cost, school unit cost and students' performance in KCSE examinations in public secondary schools in Vihiga Sub-County.

3.3 Area of Study

This study was carried in Vihiga Sub-County. It is one of the four Sub-Counties in Vihiga County. It borders Sabatia Sub-County on the North, Hamisi Sub-County to the East, Kisumu County to the South and Emuhaya Sub-County to the West. It lies between the longitudes 34^{o} 30 and 35^{o} 0 East and latitudes 0^{o} and 0^{o}15 North (Republic of Kenya, 2013b).The economic activities in the area include cash crop farming of tea, coffee, horticulture and rearing of livestock. The Sub-County covers a total area of 90.2 Km^{2}. The altitude ranges from 1300 to 1800m above sea level. The Sub-County has some hills and valleys. The average annual precipitation is 1900mm. and a mean temperature of 23^{o}C.

According to Republic of Kenya (2013b), the Sub-County is densely populated with average population density of 1,016 persons per square kilometer. The high population increases pressure on education resources, health facilities and other social services. The Sub-County has 62 public primary schools, 5 private primary schools, 28 public secondary schools and one private secondary school (Republic of Kenya, 2013a). See appendix 5 for the map of Vihiga Sub-County. The Sub-County was chosen for this study because its performance in KCSE examinations has been unsatisfactory compared with other three Sub-Counties in Vihiga County as shown in Table 1.3. It is also one of the densely populated Sub-Counties in Kenya with a high poverty index which impacts negatively on education.

3.4 Study Population

According to Kombo and Tromp (2006), study population refers to the one which a researcher hopes to apply the results of a study. The study population consisted of 20 head teachers and

350 teachers in 20 public secondary schools, and one Sub-County Education Officer in Vihiga Sub-County. The Sub-County has 28 public secondary schools. However, only 20 schools had presented candidates for KCSE examination during the period 2010-2013. Head teachers are charged with responsibility of purchasing materials and facilities necessary for good academic results. Teachers are important because they implement the curriculum hence they provided valuable information for this study.

3.5 Samples and Sampling Procedure

Sampling is the process of selecting a few (a sample) from a bigger group (the sampling population) to become the basis for estimating or predicting the prevalence of unknown piece of information, situation or outcome regarding the bigger group (Kumar, 2005). A sample is a sub group of the population you are interested in (Kothari, 2004).A sample of 18 head teachers,307 teachers in 18 public secondary schools and the Sub-County Director of Education in the Sub-County were selected using saturated sampling technique. Saturated sampling is a non-probability sampling procedure in which all members of a target population are selected because they are too few to make a sample out of them (Cohen, Manion & Morrizon, 2000). Two schools were selected for pilot study. A pilot study of 10% of the population is sufficient to measure reliability of the instruments of study (Kumar, 2005). The sample frame shown in Table 3.1 gives category of respondents, sample size and corresponding percentages that were used in the study.

Table 3.1: Sample Frame

Category of respondents	Study population Number(N)	Sample size Number(n)	%
Head teachers	20	18	85.71
Teachers	350	307	87.71

Source: Sub-County Education Office, Vihiga Sub-County

3.6 Instruments of Data Collection

The instruments of data collection were questionnaire, document analysis and interview schedule. There were two types of questionnaire in this study; head teacher's questionnaire (HTQ) and teacher's questionnaire (TQ).

3.6.1 Head teacher's Questionnaire (HTQ)

Head teacher questionnaire sought information on school's recurrent expenditure and students' performance. According to Kombo, (2006) questionnaire measures the likelihood of straight, even and blunt answers. It had four sections dealing with the school's information, non-teacher recurrent expenditure, teachers' salaries and students' KCSE performance. The researcher chose to use a questionnaire on the school principals because they are literate and therefore could respond to the questions unaided. The questionnaires also enabled the researcher to collect data simultaneously therefore saving on time. (See Appendix 1)

3.6.2 Teacher's Questionnaire (TQ)

Teacher questionnaire sought information on teacher's salary. It had two sections dealing with background information and teacher's salary details. Teachers are important because they implement the curriculum hence they provided valuable information for this study. Teachers are also literate hence could fill questionnaires with no aid (See Appendix 2).

3.6.3 Head teacher's Interview Schedule

Head teacher's interview schedule was administered to the head teacher to gather information on the contributing factors to KCSE examination performance. An interview guide is a set of questions that an interviewer asks when interviewing respondents (Orodho, 2009). Interviews are justifiable in research as they can be personalized specially to the knowledge and understanding of the interviewee. Turner, (2010) also observes that interviews allow an in-depth insight into how individuals comprehend and relate various aspects. Information obtained included availability of physical facilities, school fees payment, text books, science equipment, motivation for teachers, and their opinion on the factors that contributed students' academic achievement in KCSE examinations. It also captured qualitative data from the head teachers of public secondary schools of Vihiga Sub-County on the financial factors influencing academic performance in their schools (See Appendix 4).

3.6.4 Document Analysis Guide (DAG)

The document analysis guide was used to get information from school fees structure, KCSE examination results and TSC salary guide during the period 2010-2013. The school fees structure and TSC salary guide helped in calculating non-teacher unit costs and teacher unit costs

respectively while KCSE examination results helped in getting trend of KCSE examination performance during the period of study. The document analysis guide was also used for triangulation and confirming information collected from various respondents (See Appendix 5).

3.7 Validity of the Instruments

Validity is the accuracy and meaningfulness of inferences, which are based on the research results (Kumar, 2005). Validity is the degree to which data actually represents the phenomenon under study. Content validity enables data being collected to be reliable in representing the specific content of a particular concept. Validation of the instruments was addressed by presenting the research instruments to experts in the Department of Educational Management and Foundations, Maseno University. The experts verified and scrutinized the instruments and ensured that each item in the instruments measured and elicited the anticipated data which could be meaningfully analyzed, in relation to the research hypotheses and objectives. Their suggestions and recommendations were then used to improve on the items in the instruments. This helped to determine the accuracy and adequacy of the items.

3.8 Reliability of the Instruments

Reliability is a measure of the degree to which a research instrument yields consistent results or data after repeated tests (Kombo and Tromp, 2006). Pilot study was carried out in two secondary schools within the Sub-County to determine the reliability of the instruments. According to Hopkins (2000), a sample of 10% of the population is acceptable for pilot study. The two schools did not take part in the actual study. The test-retest method was used to estimate the reliability of the instruments which included head teacher's questionnaire, head teacher's interview schedule

and teacher's questionnaire. The instruments were administered twice within an interval of two weeks. They generated Pearson's Product Moment Correlation Coefficient (r) of 0.85 for head teacher's questionnaire, 0.79 for head teacher's interview schedule and 0.82 for teacher's questionnaire. The instruments were then considered reliable. According to Hinton-Bayre (2010), a reliability index of 0.70 and above is considered reliable. A reliability coefficient of 0.70 implies that 70 percent of the measured variance is reliable and 30 percent is due to random error thus the lower the reliability coefficient, the less reliable the measure. The questionnaires were made confidential by not indicating the names of the respondents on the instruments and the researcher personally administered the instruments to ensure they are reliable.

3.9 Data Collection Procedures

Before undertaking the actual study, the researcher sought approval of the research proposal by Maseno University School of Graduate Studies. Permission was sought from the Ministry of Education Science & Technology through Maseno University Ethics and Review Committee before proceeding to the schools. The researcher then visited all the sampled schools and the Sub-County Director of Education's Office to administer the questionnaire. Secondary data was collected by reviewing the past KCSE examinations results, school fees structures and TSC circulars about teachers' salary reviews in the previous years.

3.10 Method of Data Analysis

Quantitative research includes designs, techniques and measures that produce discrete numerical of quantifiable data (Kothari, 2004). Quantitative data collected from closed ended items in the questionnaires and document analysis guide was analyzed by descriptive statistics in the form of

percentages to indicate students' enrolment in each school by category, that is county and sub county schools and the type of schools whether boys' or girls' schools and frequency tables to show the rate of responses for each category of questionnaires such as school's information, teacher's information, teacher's job group by number and means to get teacher unit cost, non-teacher unit cost and school unit costs. Inferential statistics in the form of Pearson's Product Moment Correlation was used to determine the effect of teacher unit cost, non-teacher unit costs, and school unit costs on the students' performance in KCSE examinations. Qualitative data collected by use of interview schedule was transcribed into themes and sub-categories as they emerged from the field and then tallied and presented in frequencies and percentages. The null hypothesis was tested at, 0.05 level of significance.

3.11 Ethical Consideration

Ethical issues revolve around human moral conduct that include; respect, intellectualism, fabrication, plagiarism, among others. Therefore, this was achieved by conducting research within the confines of the copy right provisions such as acknowledging authors and punctuating quotations when developing the proposal. When dealing with respondents, corrective measures was taken to counter any rising unethical issues that could cause embarrassment to both the respondents and the researcher. Right protocol was observed when dealing with respondents and institutions.

The researcher ensured that the research participants' rights and welfare were not violated before, during and after conducting the research. Their rights and risks or dangers associated with their participation were clarified. Their voluntary involvement in the research was

henceforth fully guaranteed. A consent letter was also given to the head teachers and Sub county Director of Education. The researcher urged participants to provide honest, valid and reliable information. To enhance informed consent, participants were briefed beforehand on the research problem, the need for a scientific research on the problem, the reasons for the area of study and the benefits of the study.

Confidentiality of the following information was strictly observed in the study. They included the individual teacher's salaries, school financial information given by the school head teachers and Sub-county Director of Education. Great care was taken to avoid identification of real participants in the study. Confidentiality was maintained since the information provided was used purely for academic research purposes. Data was coded and bore no names of the participants to protect their identity. The raw data from field was kept under lock and key where only the researcher could access. The processed data was stored in computer encrypted by password accessible to only the researcher.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter introduces the data analysis section which comprises of the questionnaire return rate, demographic information of the respondents, the presentation, data analysis and discussion of the results for the study. The data analysis hinges on the objectives of the study.

4.2 Instruments Return Rate

Instruments return rate is the proportion of the research instruments that have been returned after they have been administered to the respondents. In this case, questionnaires and interview guides were administered to the respondents. All the questionnaires administered to the school principals were returned. Effort was made to ensure that the school principals filled-in and returned their questionnaires. The data in all schools on students enrolment, KCSE performance and the number of secondary schools teachers was needed, therefore, there was need to make effort to get all the questionnaires. The questionnaire tools were designed to collect data from principals and teachers. Out of 18 questionnaires distributed to principals, all of them were fully filled up. This makes the questionnaire return rate to be 100 %. Out of the total 307 teacher's questionnaires which were administered, all of them were returned making the instrument return rate to be 100%. According to Mugenda and Mugenda (2003), any questionnaire return rate above 80% in considered representative enough. Table 4.1 shows the instrument return rate.

Table 4. 1: Questionnaire and return rate

Type of instrument	Number administered	Number returned	% Return rate
Head teacher's questionnaire	18	18	100
Teacher's questionnaire	307	307	100
Total	325	325	100

Table 4.1 shows that the response rate of the respondents was very high, 100% of the administered questionnaires and interview schedule were returned.

4.2 Demographic Characteristics of the Respondents

4.2.1 Distribution of Schools by Category and Type

The study sought to establish demographic information of the respondents such as distribution of schools by category as county, sub-county and school type such as boarding, day, boarding & day. This was aimed at establishing whether unit cost of education varies by category of the schools. The results are illustrated in Table 4.2

Table 4. 2: Distribution of schools by category and type

Category	School type			Total
	Boarding f(%)	Day f(%)	Boarding and Day f(%)	f (%)
County	5(27.78)	2(11.1)	0(0.0)	7(38.89)
Sub County	0(0.0)	10(55.56)	1(5.56)	11(61.11)
Total	5(27.78)	12(66.67)	1(5.56)	18(100.0)

Table 4.2 shows that 61.11% of the schools were sub county schools while county schools were 38.89%. Boarding schools were 27.78% while 66.67% of the schools were day. Structural differences across schools are likely to create a variation in the unit costs and academic

achievement. Also variation in charges per school along structural differences in schools creates differences both in unit costs, expenditures on items and academic performance. From Table 4.2 66.67% of schools in Vihiga Sub County are day schools with fewer resources compared to 38.89% boarding schools with more resources.

4.2.2 Distribution of Teachers by School Category and Type

The study established demographic information such as distribution of teachers by category as boarding schools, day schools and day & boarding schools and school type such as boys', girls and mixed school. This was aimed at establishing whether teacher unit cost vary with category and type of schools. The results are illustrated in Table 4.3

Table 4. 3: Distribution of teachers by school category and type

School Type	Boarding school		Day school		Day& boarding		Total
	County	Sub county	County	Sub county	County	Sub county	
	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)
Boys' school	54 (17.6)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	54 (17.6)
Girls' school	79 (25.7)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	79 (25.7)
Mixed school	0 (0.0)	0 (0.0)	31 (10.1)	128 (41.7)	0 (0.0)	15 (4.9)	174 (56.7)
Sub Total	133 (43.3)	0 (0.0)	31 (10.1)	128 (41.7)	0 (0.0)	15 (4.9)	307 (100.0)
Total	133(43.3)		159(51.8)		15(4.9)		

Table 4.3 indicates that more than a half of teachers 174(56.7%) were in Mixed schools, followed by 79 (25.7%) teachers in Girls' schools and 54 (17.6%) teachers in Boys' schools. On the other hand 159(51.3%) of the teachers were in Day schools , followed by 133(43.3%) teachers in Boarding schools and 15(4.9%) teachers in Day & boarding schools. The high

number of teachers in mixed schools led to high unit cost which though did not translate into high academic performance in KCSE examinations.

4.2.3 Principals' Distribution by Teaching Experience and School Category

The study established demographic information such as principals' distribution in boarding, day and boarding day schools and teaching experience as illustrated in Table 4.4. This was important since principals' experience determines their ability to manage school finances.

Table 4. 4: Principals Distribution by Teaching Experience and school category

Teaching Experience	Boarding f (%)	Day f (%)	Day- Boarding f (%)	Total f (%)
Over 15	1 (5.6)	5 (27.8)	0 (0.0)	6 (33.3)
Between 10-15	2 (11.1)	5 (27.8)	0 (0.0)	7 (38.9)
Between 5-10	2 (11.1)	2 (11.1)	1(5.6)	5 (27.8)
Less Than 5	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Total	5 (27.8)	12 (66.7)	1 (5.6)	18 (100.0)

Table 4.4 indicates that 7 (38.9%) of principals had experience of between 10 to 15 years, followed by principals 6 (33.3%) with over 15year experience, and principals 5 (27.8%) with experience of between 5 to 10 years. Amongst the 18 principals, 5 (27.8%) were from boarding schools, 12 (66.7%) day schools and 1 (5.65%) was from day & boarding school. This implies that majority of the principals had adequate teaching experience to carry out proper budgeting and proper utilization of resources in the schools. Proper utilization of resources is important to achieving good academic results.

4.2.4 Teachers Distribution by Teaching Experience and School Type

The study established demographic information such as teachers' distribution in boarding, day and boarding day schools and teaching experience. This was important since teachers'

experience determines their salaries and hence teacher unit cost. The results are illustrated in Table 4.5

Table 4. 5: Teachers Distribution by Teaching Experience and school type

Teaching Experience	Boarding f (%)	Day f (%)	Day & Boarding f (%)	Total f (%)
Less than 5 years	56 (18.2)	52 (16.9)	9 (2.9)	117 (38.1)
5 to 10 years	32 (10.4)	53 (17.3)	2 (0.7)	87 (28.3)
10 to 15 years	20 (6.5)	27 (8.8)	0 (0.0)	47 (15.3)
Over 15years	25 (8.1)	27 (8.8)	4 (1.3)	56 (18.2)
Total	133 (43.3)	159 (51.8)	15 (4.9)	307 (100.0)

Table 4.5 indicates that 159 (51.8%) of teachers were in day schools, followed by 133 (43.3%) in boarding schools and 15 (4.9%) in Day & Boarding school. The 56 (18.2%) of teachers found in boarding schools had teaching experience of less than 5 years. In overall, those teachers with teaching experience less than 5 years were 117 (38.1%), followed by those with 5 to 10 years at 87 (28.3%) , those with over 15years experience were 56 (18.2%) and those with 10 to 15 years were 47 (15.3%). Stephanie (2002) observed that students performed better when taught by teachers who had more than ten years' experience or who were comfortable with the curriculum. From table 4.4, majority of teachers 117(38.1%) had less than 5 years teaching experience which probably explains why students' performance in KCSE examination in Vihiga Sub County, has been poor.

4.2.5 School Enrolment Trend 2010 - 2013

The study established demographic information such as school enrolment trend according to category of school such as boarding schools, day schools and boarding day schools. Enrolment

in schools was important since the number of students in a school determines the unit cost. The results are illustrated in Table 4.6

Table 4. 6 : School Enrolment Trend From 2010 - 2013

TYPE	SCHOOLS	ENROLMENT			
		2010	**2011**	**2012**	**2013**
Boarding schools	A	420	530	539	400
	B	324	411	444	460
	C	680	637	690	695
	D	634	753	769	828
	E	1030	1030	1041	1030
	TOTAL	**3088**	**3361**	**3483**	**3413**
	Mean Enrolment	**617.6**	**672.2**	**696.6**	**682.6**
	S.D	**273.6**	**236.8**	**230.5**	**260.5**
Day schools	F	301	200	205	210
	G	443	484	543	626
	H	306	314	320	330
	I	185	229	223	232
	J	128	130	135	140
	K	301	305	310	329
	L	306	310	322	330
	M	200	102	142	131
	N	380	384	394	402
	O	412	417	420	425
	P	410	416	426	430
	Q	120	130	136	144
	TOTAL	**3492**	**3421**	**3576**	**3729**
	Mean Enrolment	**291.0**	**285.1**	**298.0**	**310.8**
	S.D	**111.1**	**127.1**	**132.5**	**148.2**

Table 4.6 gives Student Entrolment trend from 2010 to 2013 and school type. Day scholars were higher in number than boarders. But in 2013 the number of boarders dropped as those of days scholars increased. The students' enrolments in day schools could have been higher because of the Free Day Secondary Education (Kenya National Bureau of Statistic, 2012). The high cost of boarding schools also leads to drop out rate among the learners.

4.2.6 Students' Performance Index in KCSE Examination by School Type

The study established information on students' performance index in KCSE examination by school type such as boarding, day and boarding day schools. This was done with the aim of establishing whether unit cost affects students' performance index in KCSE examination. The results are illustrated in Table 4.7

Table 4. 7: Students' Performance Index in KCSE Examination by school type

School Type	School	KCSE Mean Score				
		2013	2012	2011	2010	Average
Boarding schools	A	4.33	5.032	4.798	4.058	4.554
	B	4.92	5.02	3.5	3.333	4.193
	C	5.5	5.9	5.154	4.131	5.171
	D	6.482	6.735	6.719		6.645
	E	6.911	6.487		7.924	7.107
	Mean	**5.629**	**5.835**	**5.043**	**4.862**	**5.534**
Day schools	F	5.378	3.748	3.03	4.09	4.062
	G	5.98	5.609	5.378	5.134	5.525
	H	4.78	5.191	4.809	5.167	4.987
	I	4.34	5.546	5.806	4.414	5.027
	J	3.21	3.25	3.63	3.094	3.296
	K	5.471	4.697	4.39	5.284	4.961
	L	4.3	4.443	4.301	3.811	4.214
	M	4.33	4.26	4.25	3.92	4.191
	N	4.762	4.752	5.73	5.882	5.281
	O	4.52	4.873	4.485	4.448	4.581
	P	4.226	4.65	7.306	4.752	5.234
	Q	4.065	3.774	6.921	4.895	4.914
	Mean	**4.639**	**4.594**	**5.071**	**4.634**	**4.735**
Day & Boarding school	R	**4.617**	**5.154**	**4.214**	**4.264**	**4.562**
	N	18	18	18	18	
	Mean	4.901	5.070	5.143	4.706	
	Standard Deviation	0.954	0.889	1.164	1.162	

Boarding schools had performed better with an average KCSE mean of 5.534(maximum = 7.107, minimum = 4.193) than Day schools with a mean of 4.735(maximum = 5.525, minimum = 3.296). The greatest mean of 5.143 was achieved in the year 2011, followed by 5.070 in 2012,

4.901 in 2013 and lowest of 4.706 in 2010. The KCSE performance in boarding schools is better than day school probably because boarding schools charge higher fees than day schools hence higher unit costs. Also better funding directly impacts quality of education inputs, this could explain the better students' performance in boarding schools as compared to day schools.

4.3 Teacher unit costs and Students' performance in KCSE

The first objective was to establish the effect of teacher unit costs on students' performance in KCSE examinations in public secondary schools in Vihiga Sub County. Teacher Unit Cost is Teachers' Salaries in a given academic year in each school divided by students' enrollment.

i.e $Teacher\ unit\ cost = \frac{Teachers' Salary\ in\ a\ year}{Number\ of\ students\ in\ a\ school}$

The study sought information on distribution of teachers by job group and category such as boarding and day schools as illustrated in Table 4.8

Table 4. 8: Distribution of Teachers by Teachers' Job group

Year	**2010**		**2011**		**2012**		**2013**	
School Type	Boarding schools	Day schools	Boarding schools	Day schools	Boarding schools	Day schools	Boarding schools	Day Schools
Teachers' Job group	f(%)	f(%)	f(%)	f(%)	f(%)	f(%)	f(%)	f(%)
K	68 (51.1)	62 (39.0)	66 (49.6)	59 (37.1)	63 (47.4)	57 (35.8)	52 (39.1)	1 (0.6)
L	40 (30.1	54 (34.)	37 (27.8)	52 (32.7	38 (28.6)	40 (25.2)	49 (36.8)	41 (25.8)
M	19 (14.3	26 (16.4)	23 (17.3	31 (19.5)	25 (18.8)	44 (27.7)	26 (19.5)	57 (35.8)
N	6 (4.5	17 (10.7)	6 (4.5)	17 (10.7)	6 (4.5)	18 (11.3)	5 (3.8)	42 (26.4)
P	0 (0.0)	0 (0.0)	1 (0.8)	0 (0.0)	1 (0.8)	0 (0.0)	1 (0.8)	18 (11.3)
Total	133 100	159 (100)	133 (100)	159 (100)	133 (100)	159 (100)	133 (100	159 (100)

Table 4.8 shows that in 2010 the teachers in Job group K were 130(44.5%), followed by those in L 94(32.2%), M 45(30.7%), and N were 23(15.2%). None was in Job group P. In 2011, 125(42.8%) teachers were in Job group K, 89(30.5%) in L, 54(18.5%) in M, 23(7.9%) in N and only 1(0.3%) in P. Similarly, in 2012 the teachers who were in Job group K were 120(41.1%), L were 78(26.7%), M were 69(23.6%), N were 24(8.2%), while P was 1(0.3%). Finally in 2013 53(18.2%) teachers were in K, 90(30.8%) in L, 83(28.4%) in M, 47(16.1%) in N, 19(6.5%) were in Job group P. The teachers' job groups are related with the salaries. Low job groups such as job group K attract lower salaries as compared to higher job groups such as job group P. The job groups in turn do influence unit cost.

The study also sought information on distribution of teachers by annual gross salary in boarding schools. This was done to establish teachers' unit cost. The results are illustrated in Table 4.9

Table 4. 9: Distribution of Teachers by annual gross salary in boarding schools 2010-2013

Year	Salary bracket(frequency) n= 134								Mean	S. D	Total Salary
2010	483,552 (70)	602,676 (38)	699,264 (20)	789,912 (6)					563,246.9	94,269.7	75,475,085
2011	501,624 (66)	602,676 (2)	621,348 (35)	699,264 (2)	722,940 (22)	789,912 (1)	821,664 (5)	1,137,228 (1)	592,525.3	108,641.3	79,398,390
2012	616752 (64	621348 (4)	722940 (3)	748608 (34)	821664 (1)	878496 (22)	1012512 (5)	1,239,684 (1)	716,640.5	122,885.2	96,029,827
2013	616,752 (56)	748,608 (46)	876,496 (11)	878,496 (14)	1,012,512 (6)	1,509,564 (1)			735,135.2	133,409.6	98,508,117

$$Teachers' Salary\ in\ a\ year = Mean\ Salary \times n$$

Therefore $Teacher\ unit\ cost = \frac{Teachers' Salary\ in\ a\ year}{Number\ of\ students\ in\ a\ school}$

According to Table 4.9, in 2010 Teachers' Mean Annual salary in boarding schools was ksh.563,246.9 (minimum=483,552 maximum=789,912) and Standard Deviation (S.D.) of Ksh. 94,269.7; in 2011 Teachers' Mean Annual gross salary in boarding schools was Ksh.592,525.3 (minimum=501,624 maximum=113,7228) S.D of Ksh.108,641.3; in 2012 Teachers' Mean Annual gross salary in boarding schools was Ksh.716,640.5 (minimum616,752=maximum=1,239,684)) and S.D of Ksh.122,885.2; in 2013 Teachers' Mean Annual gross salary in boarding schools was Ksh.735,135.2 (minimum=616,752 maximum=1,509,564) and S.D of Ksh.133,409. Table 4.9 shows that Teachers' Mean Annual Salary increased from 2010-2013. This is because as the teachers acquire more experience in teaching, they get annual salary increments. This has effect of increasing Teacher Unit Cost. The

Standard Deviation increased steadily from 2010-2013 with the greatest variance in 2013. This is because over the period of four years, some teachers attain higher grades which attract higher salaries while others remain in low grades with low salaries. According to Republic of Kenya (2013c), the TSC shall from time to time determine the scale to which each teacher shall belong and to promote teachers in accordance with scheme of service. The results obtained from distribution of teachers by annual gross salary in boarding schools were used to obtain total teachers salary in a year. This information was used to compute Vihiga Sub-County Teacher Unit Cost in boarding schools as illustrated in Table 4.10

Table 4. 10: Vihiga Sub County Teacher Unit Cost in boarding Schools

Year	Total Salary(Ksh)	Enrolment	Teacher Unit Cost(Ksh)
2010	75,475,085	3,088	24,441.41
2011	79,398,390	3,361	23,623.44
2012	96,029,827	3,483	27,571.01
2013	98,508,117	3,413	28,862.62

According to Table 4.10, in 2010 Teacher Unit Cost in boarding schools was Kshs 24,441.41; in 2011 Teacher Unit Cost was Kshs 23,623.44. In 2012 Teacher Unit Cost was Kshs 27,571.01 and in 2013 Teacher Unit Cost was Kshs 28,862.62. There was an upward trend in Teacher unit cost. This situation could be attributed to annual salary increments over the four year period. According to Republic of Kenya (2013c), TSC shall promote teachers in accordance with scheme of service and also seniority and experience of teachers. The teachers who are more experienced, also attract increased salary which in turn leads to increased Teacher Unit Cost.

The study also sought information on distribution of teachers by annual gross salary in day schools. This was done to establish teachers' unit cost in day schools. The results are illustrated in Table 4.11

Table 4. 11: Distribution of Teachers by Annual gross salary in day schools 2010- 2013

Year	Salary bracket(frequency) n= 158							Mean	S. D	Total Salary
2010	483,552 (61)	602,676 (56)	699,264 (24)	789,912 (17)				591,502.3	103,004.9	93,457,363.4
2011	501,624 (58)	602,676 (3)	621,348 (50)	699,264 (4)	722,940 (26)	821,664 (17)		617,287.4	107,210.8	97,531,409.2
2012	616,752 (58)	621,348 (3)	722,940 (7)	748,608 (35)	821,664 (1)	878,496 (36)	1,012,512 (18)	756,773.8	136,315.4	119,570,260.4
2013	616,752 (56)	748,608 (39)	878,496 (45)	1,012,512 (18)				768,932.7	136,404.1	121,491,366.6

According to Table 4.11, Teachers' Mean Annual salary in day schools in 2010 was Ksh.591,502.3 (minimum=483,552 maximum=789,912; S.D=103,004.9); in 2011 Teachers' Mean Annual salary in day schools was Ksh.617,287.4 (minimum=501,624 maximum=821,664, S.D=107,210.8); in 212 Teachers' Mean Annual salary in day schools was Ksh.756,773.8 (minimum=616,752 maximum=1,012,512 S.D=136,315.4); in 2013 Teachers' Mean Annual salary in day schools was Ksh.768,932.7 (minimum=616,752 maximum=1,012,512 S.D=136,404.1). Table 4.11 shows that Teachers' Mean Annual Salary increased from 2010-2013. This is because as the teachers acquire more experience in teaching, they get annual salary increments. This has effect of increasing Teacher Unit Cost. The Standard Deviation also

increased steadily from 2010-2013 just as experienced in boarding secondary schools. This is because over the period of four years, some teachers attain higher grades which attract higher salaries while others remain in low grades with low salaries. The results obtained from distribution of teachers by annual gross salary in day schools were used to obtain total teachers' salary in a year. This information was used to compute Vihiga Sub-County Teacher Unit Cost in day schools as illustrated in Table 4.12

Table 4.12: Vihiga Sub County Teacher Unit Cost in day Schools

Year	Total teachers' Salary(Ksh)	Enrolment in Vihiga	Teacher unit cost(KSh)
2010	93,457,363.4	3492	26,763.28
2011	97,531,409.2	3421	28,509.62
2012	119,570,260.4	3576	33,436.87
2013	121,491,366.6	3729	32,580.15

According to Table 4.12, In 2010 Teacher Unit Cost in day schools was Ksh. 26,763.28; in 2011 Teacher Unit Cost was Ksh. 28,509.62. In 2012 Teacher Unit Cost was Ksh. 33,436.8 and in 2013 Teachers Unit Cost was Ksh. 32,580.15. There was an upward trend in Teacher unit cost before slight decrease in 2013. This situation could be attributed to annual salary increments over the period of four years according to Republic of Kenya (2013c). The slight decrease in 2013 could be attributed to increase in enrolment over the same period due to FDSE with enrolment increasing from 3,492 in 2010 to 3,729 while the number of teachers remaining constant over the same period at 158.

The study also sought to determine effect of teacher unit cost on students' performance in KCSE examination in boarding secondary schools. To this effect, a Pearson product-moment

correlation coefficient was carried out to establish if there is any effect. The results are illustrated in Table 4.13

Table 4.13: Correlation of Teacher Unit Cost in Boarding Schools and KCSE Mean

		Teacher Unit Cost in Boarding Schools				Hypothesis testing
KCSE Mean		**2010**	**2011**	**2012**	**2013**	
	R	.371				
2010	**Sig. (2-tailed)**	.061				
	N	134				Accepted
	R		.422			
2011	**Sig. (2-tailed)**		.057			
	N		134			Accepted
	R			.267		
2012	**Sig. (2-tailed)**			.082		
	N			134		Accepted
	R				.460*	
2013	**Sig. (2-tailed)**				.062	
	N				134	Accepted

*. Correlation is significant at the 0.05 level (2tailed).

Table 4.13 shows that in 2010 there was a positive moderate relationship (r = 0.371, p = 0.061) between KCSE Mean Score in boarding schools and Teacher Unit Costs in 2010. In 2011, a positive moderate relationship existed between KCSE Mean Score in boarding schools and Teacher unit costs (r = 0.422, p = 0.057).In 2012, a positive and weak correlation existed between KCSE Mean Score in boarding schools and Teacher unit costs (r = 0.267, p = 0.082).In 2013, a positive and moderate relationship existed between Teacher unit cost and KCSE Mean Score in boarding schools (r = 0.460, p = 0.062). This implies that there is effect of teacher unit cost on KCSE mean score. The effect is neither very strong nor very weak but it is moderate as demonstrated by the results. However, on analyzing relationship between KCSE mean score and

Teacher Unit Cost, the null hypothesis was accepted since p>0.05 between 2010-2013.According to Cohen (2000), Pearson's Correlation Coefficient (r) is used to establish effect among variables when the population of study is less than 1000. Pearson's (r) is a parametric test for linear associations and it is a stringent test for associations according to (Cohen, 2000). A coefficient (r) of 0.3-0.5 implies a moderate effect or strength of relationship.

It was also necessary to categorize teachers in boarding and day schools in order to analyze teacher unit cost in both categories. To this effect, a Pearson product-moment correlation coefficient was carried out to establish whether there is any effect of teacher unit cost on KCSE mean in day schools. The results are illustrated in Table 4.14

***Table 4. 14*: Correlation of Teacher Unit Cost in Day Schools and KCSE Mean**

		Teacher Unit Cost in Day Schools				**Hypothesis**
Mean Score		**2010**	**2011**	**2012**	**2013**	**testing**
	R	.414				
2010	**Sig. (2-tailed)**	.051				
	N	129				Accepted
	R		.360*			
2011	**Sig. (2-tailed)**		.067			
	N		158			Accepted
	R			.256		
2012	**Sig. (2-tailed)**			.076		
	N			158		Accepted
	R				.311	
2013	**Sig. (2-tailed)**				.062	
	N				151	Accepted

*. Correlation is significant at the 0.05 level (2tailed).

Table 4.14 shows that there was a positive moderate relationship (r = 0.414, p = 0.051) KCSE Mean Score in day schools and Teacher Unit Costs in 2010. In 2011, a positive moderate relationship existed between KCSE Mean Score in day schools and Teacher unit costs (r = 0.360, p = 0.067). In 2012 a positive weak correlation existed between KCSE Mean Score in day schools and Teacher unit costs (r = 0.256, p = 0.076). In 2013, a positive moderate relationship existed between Teacher unit cost and KCSE Mean Score in day schools (r = 0.311, p = 0.062). These results are consistent with the effect of teacher unit cost in boarding schools. The null hypothesis was accepted since p>0.05 between 2010 and 2013. However, since Pearson's Correlation Coefficient (r) is 0.3-0.5, there is a moderate effect or strength of relationship according to Cohen (2000). These results are in line with the findings by Stephanie (2002) who established that students performed better when taught by teachers who had more than ten years' experience or who were comfortable with the curriculum. This implies that because of such teachers' experience, they attract higher salaries, hence higher teacher unit costs.

The finding of this research also concurs with Okoth (2012) who posits that salaries exert a strong influence on the level of education expenditures. Highly qualified staff poses higher instructional skills. The study found correlation coefficient of 0.500 implying that salaries explained 50% of pupils' performance in KCPE in the study. The study posits that schools whose staffs are well paid are able to retain highly motivated staff who will improve performance. In the study carried in primary schools in Kisumu Municipality, most teachers received between Kshs. 200,000-500,000 gross annual salaries. A few received Kshs.600,000-700,000. This study also agrees with Eshiwani (1993) who argues that quality of education as well as pupil

achievement in examinations depends on the teacher and a teacher who is paid well gives better results.

These findings, however, differ from Thias and Carnoy (1972) who carried out research to determine whether increase in teachers' salaries can significantly affect students' examination performance. Research by Thias and Carnoy (1972) indicates that the hypothesis has never yielded a positive result in developing or developed countries. These findings also differ from Hanushek (2013) view that increasing teacher salary does not have any positive effect on students' examination performance. The study states that primary determinant of teacher pay-experience and educational level- do not have consistent link with achievement of learners. What teachers are paid also shows little consistent link with achievement. A teacher who has been successful in improving students' achievement is as likely to have low salary as a high salary (Hanushek, 2013). Teacher quality does not appear to be closely related to salaries or to market decisions. In particular teachers exiting for other professions outside teaching do not appear to be of higher quality than those who stay (Hanushek, 2013).

The findings of this research also differ from Ayot and Briggs (1992) who are of the view that teachers should perform better at their present levels of salaries, education and experience. In his studies, Ayot and Briggs found out that parents who are vested with the responsibility of providing school facilities such as science equipment, text books and physical structures share the same view that teachers should perform better at their present salaries. Agwanda (2002) also concurs that poor results in public primary schools are as a result of poor training of teachers and experience rather than remuneration. The results of this study differ with Agwanda (2002), Ayot and Briggs (1992) because of high inflation experienced in the country (Kenya National Bureau

of Statistics, 2012). The high inflation has eroded the purchasing power of most citizens and therefore higher salaries are able to make teachers comfortable as they handle the syllabus. The findings of Ayot and Briggs (1992) was more of opinion of parents because of pain of paying school fees during cost sharing period (Republic of Kenya, 1988). Agwanda (200) posits that poor results are due to poor training of teachers but the shortcoming is that trained teachers attract higher pay than untrained teachers with the effect of increasing teacher unit cost.

4.4 Non-Teacher Unit Costs and Students' Performance in KCSE

The second objective of the study was to determine the effect of non-teacher unit costs on students' performance in KCSE examinations in public secondary schools. Non-teacher unit cost is non-teacher expenditure which consists of school fees paid by parents and government grants in a given academic year per student. It was obtained by collecting information from the school fees structure and government grants. This cost is made up of school fees which were categorized in the following Vote Heads, Boarding (B.E.S), Tuition (S.E.S), P.E, P.A, L.T&T, E.W&C, Activity, R.M.I, Motivation, E.I.F, Medical, Holiday Tuition and Contingencies. It was important to further categorize schools into boarding and day schools as illustrated in Table 4.15

***Table 4. 15*: A comparison of Fee in day and boarding schools, 2010-2013**

	Boarding Schools (n=5)		**Day Schools (n =12)**	
Vote head	Mean	S.D	Mean	S.D
Boarding	20259.0	2851.7		
Tuition	4181.3	927.5	7261.0	15498.7
P.E.	6493.1	990.2	3099.1	1157.8
P .T.A	3141.8	692.6	1684.1	1262.7
L .T.&T	1267.9	346.6	499.5	389.3
E .W &C	2026.9	223.2	477.6	139.0
Activity	1289.6	540.7	499.4	211.2
R .M &I	925.4	291.9	441.9	148.3
Contingencies	1013.4	362.9	427.2	176.5
E.I.F	426.1	35.1	332.3	136.5
Medical	655.9	236.5	248.1	268.9
SMASSE	200.0	0.0	392.4	377.6
Mock	1000.0	0.0	520.9	483.6
Motivation	970.2	1096.4	57.0	232.5
Holiday Tuition	511.9	980.0	0.0	0.0
Non-Teacher Unit Cost	**47696.7**	**7944.5**	**21840.9**	**19867.9**

Table 4.15 shows that there is a wide difference between fees paid in boarding schools and day schools. The results show that students in boarding schools pay an average of Ksh 47,696.70 per year compared to those in day schools who pay Ksh 21,840.90. Non-teacher unit cost is the non teacher expenditure which consists of costs borne by the students in the form of school fees in a given academic year. To compute unit cost, the non-teacher expenditure in a given academic year is divided by students' enrolment in a school. The fee paid per academic year therefore gives the non-teacher unit cost.

This study sought to determine the effect of non-teacher unit cost on KCSE examination by school category. To this effect, a Pearson product-moment correlation coefficient was carried out to establish whether there effect on KCSE Mean Score. The results are illustrated in Table 4.16

***Table 4. 16*: Correlation of Fee Vote Head and KCSE Mean,2010-2013**

Vote head	Boarding School (n=5)		Day School (n=12)	
	Pearson Correlation	Sig. (2-tailed)	Pearson Correlation	Sig. (2-tailed)
Boarding	.898*	.000		
Tuition	.272	.001	.355	.001
Personal Emoluments	.696*	.000	.125	.001
P .T.A	.131	.001	.475*	.000
L .T.&T	.926*	.000	.172*	.031
E .W &C	.646*	.000	.430*	.000
Activity	.794*	.000	.008	.001
R .M &I	.457*	.000	.596*	.000
Contingencies	.899*	.000	.085	.000
E.I.F	.278*	.001	.211*	.008
Medical	.892*	.000	.442*	.000
SMASSE	.455	.001	.356	.001
Mock	.560	.001	.454*	.000
Motivation	.322*	.000	.005	.955
Holiday Tuition	.137	.001	.365	.001
TOTAL	.863*	.000	.440	.001

*. Correlation is significant at the 0.05 level (2tailed).

Table 4.16, shows there is a strong positive correlation between non teacher unit cost and KCSE mean in boarding and day schools. Boarding schools have a strong positive correlation (r=0.863, N=5 and *p*=000). Day school showed positive correlation (r=0.440, N=12 and *p*=.001). This implies that as the non-teacher unit cost increases, KCSE mean score increases. Non –teacher unit cost is a measure of the unit expenditure per student per year. The Non-teacher unit costs in this research included fees paid by parents and government through FDSE. This means that as fees paid by parents and government increase the KCSE mean score is likely to increase. This is because better funding directly impacts quality of inputs procured to support educational provision. This could explain better performance in boarding schools.

These results agree with Bray (2002), who noted that some countries expenditures in education produces education with good quality (albeit always with room for improvement), while in other countries quality is very low. The latter again indicates gaps that need more financing and/or more efficient use of existing resources. Education in economic development is that it is an investment in human capital. These findings also agree with UNESCO-UIS (2006) which indicates that secondary education public expenditure per student increased across major regions of the world. This reflects the importance countries attach to education. The aim of increasing expenditure is to increase quality-measured by performance index and also access. The study findings agrees with this research finding since the more the schools spend in terms of resources the better the performance.

This research finding also agree with Krueger(2003) and Greenwald (1996) as cited in Kang (2007) who posits that effectiveness of public school expenditures has positive effect on performance. The findings also agree with Sonstelie (2007) who argues that resource increase have a modest positive effect on performance. Oguntoye (1978), in a research carried in Nigeria agrees that Non-teacher unit cost make positive and significant contribution to exam performance when other variables are kept constant. Olel (2000), in a research carried in Kisumu County about optimal utilization of resources, found out that Non-teacher recurrent expenditures largely influence recurrent expenditures per student. These findings concur with Sika (2003) view that sub county schools experience financial deficit while county schools experience financial surplus. The study concluded that schools with surplus income perform better than schools with financial deficit. In Vihiga Sub County, however, the performance in KCSE remains low 5.361(C-). Krueger (2003) and Greenwald (1996) as cited in Kang (2007) posit that

effectiveness of public school expenditures has positive effect on performance. Low KCSE performance is due to large number of Sub County Schools with financial deficit. According to Sika (2003), schools with surplus income perform better than schools with financial deficit.

Head teachers of county schools 5(27.78%) were interviewed to determine; financial status of the schools, use of money to improve the results and availability of resources in the schools. It was found out that; the fee payment was described by the Head teachers as 'very good'. One head teacher of a boarding school made this comment; " We use the fees paid by parents to motivate teachers, sponsor academic trips, benchmarking to other high performing school, carry out joint exams, buying text books, photo printers, equipment and computers". The KCSE Mean Score in the schools was 5.534 (C) in 2010-2013. The KCSE mean score in these boarding schools is higher than the results in sub county schools. Due higher fees paid by households and government in boarding schools, the non teacher unit cost is higher. This gives the County schools advantage to buy more learning material and as result they are able to achieve better KCSE mean scores.

Some twelve head teachers of day schools 12 (66.67%) were also interviewed. The results indicated that in the schools, student school fees were the main source of revenue. One head teacher of the day schools had this to say,

> "I have realized that in day schools, fee payment is very poor, the text book to student ratio is about 1:7, each school has only one laboratory to cater for Biology, Chemistry and Physics and students disappear when sent home to bring school fees, the KCSE results over the years are also poor because of financial struggles".

The head teachers described the KCSE examination results from 2010-2013 as "poor'. The KCSE mean score was 4.735(C-). They attributed the poor results to low financial resources from government and households. They reported that low finances in the schools hinder the schools from purchasing required text books and other learning materials. Low fee payments usually results in low non teacher unit costs. These findings concur with Sika (2003), who observed that majority of Sub County schools experienced financial deficit. A study by Nyaoga (2003), observed that some schools spend highly hence high performance while schools with less to spend perform dismally. The poor KCSE examination results are attributable to low non teacher unit cost since the schools cannot meet their financial obligations

4.5 School Unit Cost and Students' Performance in KCSE

The third objective of the study was to establish the effect of school unit costs on students' performance in KCSE examinations in public secondary schools in Vihiga Sub County**.** School Unit Cost is the sum of Teacher Unit cost and Non Teacher Unit cost (school fees) in a given academic year. To this effect school unit was computed by combining previous results of teacher unit and non teacher unit cost. The results are illustrated in Table 4.17

***Table 4. 17*: School Unit Cost in Boarding and Day Schools**

Year	Boarding School			Day School		
	Teacher Unit Cost (Ksh)	**Non Teacher Unit Cost (Ksh)**	**School Unit Cost (Ksh)**	**Teacher Unit Cost (Ksh)**	**Non Teacher Unit Cost(Ksh) (Ksh)**	**School Unit Cost(Ksh)**
2010	24,441.4	30,939.3	55,380.7	26,763.28	19,061.3	45,824.6
2011	23,623.4	39,014.6	62,638.0	28,509.62	22,387.6	50,897.2
2012	27,571	45,353.6	72,924.6	33,436.87	22,692.5	56,129.4
2013	28,862.6	47,696.7	76,559.3	32,580.15	21,840.9	54,421.1

Table 4.17 shows that school unit cost in boarding schools were higher than in day schools. This is because boarding schools fees are higher than day schools. The school unit cost in boarding schools was on a steady increase from Ksh 55,380.7, Ksh 62,638.0 Ksh 72,924.6. Finally it culminated into the highest Ksh 76,559.3.The same trend was also observed in day schools because there was an increase in School Unit Cost from Ksh 45,824.6 to Ksh 56,129.4 in 2012, and then it fell slightly to Ksh 54,421.1 in 2013. School Unit Cost is the sum of money spent by the government and parents to educate one student per academic year by paying school fees and paying each teacher.

This study sought to determine the effect of school unit cost on KCSE mean score. To this effect, a Pearson product-moment correlation coefficient was carried out to establish whether school unit cost has effect on KCSE Mean Score. The results are illustrated in Table 4.18

***Table 4. 18*:Correlation of School Unit Cost and KCSE Mean Score in 2010-2013**

School Unit Costs		2010 KSCE Mean Score			
		Boarding Schools	**Hypothesis Testing**	**Day Schools**	**Hypothesis Testing**
2010	r	.681*		.606*	
	Sig. (2tailed)	.021		.032	
	N	5	Rejected	12	Rejected
2011	r	.778*		.540	
	Sig. (2tailed)	.002		0.05	
	N	5	Rejected	12	Rejected
2012	r	.532*		.627*	
	Sig. (2tailed)	.042		.025	
	N	5	Rejected	12	Rejected
2013	r	.760*		.560*	
	Sig. (2tailed)	.002		.012	
	N	5	Rejected	12	Rejected

Correlation is significant at the 0.05 level (2tailed).

Table 4.18 shows that in 2010, there was significant strong positive relationship between KCSE Mean Score in boarding schools and school unit costs, (r = 0.681, p = 0.021). Similarly, in day schools there was significant strong positive relationship between KCSE Mean Score in day schools and school unit costs(r = 0.606, p = 0.032). In 2011, significant positive and strong relationship existed between KCSE Mean Score in boarding schools and school unit costs(r = 0.778, p = 0.02). Similarly significant positive and strong relationship existed between KCSE Mean Score in 2011 in day schools and school unit costs(r = 0.540, p = 0.05). In 2012 significant positive and strong correlation existed between KCSE Mean Score in boarding schools and school unit costs (r = 0.532, p = 0.042). On the same note positive and strong relationship existed between KCSE Mean Score in 2012 in day schools and school unit costs (r = 0.627, p = 0.025).In 2013, significant positive and strong relationship existed between school unit cost and KCSE Mean Score in boarding schools (r = 0.760, p = 0.02). In Day Schools, also

a strong correlation existed between KCSE Mean Score and school unit cost (r = 0.560, p = 0.012). According to results in Table 4.18 in 2010-2013, on analyzing the relationships between KCSE Mean Score in boarding schools, day schools and school unit costs, there was significant positive and strong relationship. Therefore the null hypothesis was rejected since $p < 0.05$ and the alternative hypothesis was accepted, that is there is significant effect of school unit cost on students' performance in KCSE examinations in public secondary schools in Vihiga Sub-County.

These research findings concur with OECD (2004) which posits that expenditure on education is an investment that can help foster economic growth, enhance productivity, contribute to personal and social development, and reduce social inequality. The proportion of total financial resources devoted to education is one of the key choices made in each country by governments, enterprises and individual students and their families alike (OECD, 2004). Expenditure per student is an indicator of the investment made by countries in each student at the different levels of education. Expenditure on education per student at each level of education is obtained by dividing the total expenditure on educational institutions at that level by the number of full-time students. The findings of this study also agree with Oguntoye (1978) view that recurrent expenditure per pupil (the bulk of which was teacher expenditures) and non-teacher expenditure per pupil (measuring the quality of other personnel, books and equipment) make positive and significant contributions to exam performance

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the findings, the conclusions that can be drawn, recommendations and suggestion for further research.

5.2 Summary of the Findings of the Study

5.2.1 Teacher Unit Cost and Students' performance in KCSE examinations

The first objective of the study was to establish the effect of teacher unit costs on students' performance in KCSE examinations in public secondary schools in Vihiga Sub-County. The study established that there was positive and moderate relationship between KCSE Mean Score in boarding schools and Teacher Unit Costs. In 2010, there was a positive moderate relationship ($r = 0.371$, $p = 0.061$), in 2011, a positive moderate relationship existed between KCSE Mean Score in boarding schools and Teacher unit costs ($r = 0.422$, $p = 0.057$), in 2012 positive weak correlation existed between KCSE Mean Score in boarding schools and Teacher unit costs ($r = 0.267$, $p = 0.082$), in 2013, positive and moderate relationship existed between Teacher unit cost and KCSE Mean Score in boarding schools ($r = 0.460$, $p = 0.062$). The same trend was also repeated on analyzing the relationships between KCSE Mean Score in day schools and Teacher Unit Costs, there was a positive moderate relationship in 2010 ($r = 0.414$, $p = 0.051$),in 2011 ($r = 0.360$, $p = 0.067$),in 2012 ($r = 0.256$, $p = 0.076$), in 2013, ($r = 0.311$, $p = 0.062$).

The study established that there is moderate effect of teacher unit costs on students' performance in KCSE examinations in public secondary schools in Vihiga Sub County. The findings concur

with some reviewed literature which found some influence of teachers' salaries on students' performance in KCSE examinations in public secondary schools. Salaries given to teachers in Vihiga Sub County therefore may translate to high performance in KCSE examinations. This means that salary also act as a motivator to performance in KCSE examinations.

5.2.2 Non-Teacher Unit cost and Students' performance in KCSE Examinations

The second objective was to determine the effect non-teacher unit costs on students' performance in KCSE examinations in public secondary schools in Vihiga Sub-County. The study established that there was positive effect of non-teacher unit costs on students' performance in KCSE examinations in public secondary schools in Vihiga Sub-County. The study established a strong positive correlation between non teacher unit cost and KCSE mean in boarding and day schools. Boarding schools have a strong positive correlation (r=0.863, N=5 and *p*=000). Day school showed positive correlation (r=0.440, N=12 and *p*=.001). This implies that as the non-teacher unit cost increases, KCSE mean score increases. Non –teacher unit cost is a measure of the unit expenditure per student per year The Non-teacher unit costs in this research included fees paid by parents and government through FSE. This means that as fees paid by parents and government increase the KCSE mean score is likely to increase. This is because better funding directly impacts quality of inputs procured to support educational provision. This could explain better performance in boarding schools than day schools.. These findings concur with better performance in KCSE examinations recorded in boarding schools as compared with relatively low performance in day secondary schools in Vihiga Sub County. The research findings agree with reviewed literature which found positive effect of per student expenditure on student's academic performance.

5.2.3 School Unit Cost and Students' Performance in KCSE Examinations

The third objective was to establish the effect of school unit costs on students' performance in KCSE examinations in public secondary schools in Vihiga Sub-County. The study established that there is a strong positive correlation effect of school unit cost on students' performance in KCSE examinations in public secondary schools in Vihiga Sub-County. In 2010 there was significant positive and strong relationship (r = 0.681, p = 0.021), similarly, in day school the result was (r = 0.606, p = 0.032). In 2011, significant positive and strong relationship existed between 'KCSE Mean Score in boarding schools and school unit costs(r = 0.778, p = 0.02). In day schools the result was (r = 0.540, p = 0.05). In 2012 significant positive strong correlation existed between 'KCSE Mean Score in 2012 in boarding schools and school unit costs (r = 0.532, p = 0.042). On the same note positive strong significant relationship existed between 'KCSE Mean Score in 2012 in day schools and school unit costs (r = 0.627, p = 0.025), in the year 2013, significant positive and strong relationship existed between school unit cost 2013 (r = 0.760, p = 0.02) and KCSE Mean Score in 2013. In Day Schools, similarly significant positive strong correlation existed between KCSE Mean Score 2013 and school unit cost (r = 0.560, p = 0.012). These findings confirm the fact that schools who allocate increased expenditure on education performed well while schools with least public investment on education have low performance.

5.3 Conclusions

Based on findings of the study, the following conclusions were made;

(i) There is moderate effect of teacher unit costs on students' performance in KCSE examinations in public secondary schools in Vihiga Sub-County. This means that salaries of

teachers have an effect on students' performance in KCSE examinations in public secondary schools in Vihiga Sub-County. Salaries act as motivators to teachers hence improved students' performance in KCSE examinations.

(ii) There is significant effect of non-teacher unit costs on students' performance in KCSE examinations in public secondary schools in Vihiga Sub-County. This means that schools with increased per student expenditure tend to perform better than schools with least per student expenditure.

(iii) There is significant effect of school unit costs on students' performance in KCSE examinations in public secondary schools in Vihiga Sub-County. This means that schools who allocate increased expenditure on education performed well while schools with least public investment on education have low performance.

5.4 Recommendations of the Study

In view of the findings and conclusions of the study, the following recommendations were made;

(i) This study established that teacher unit cost which consists of teachers' salaries has a moderate effect on students' performance in KCSE examination. This study therefore recommends to MOE and TSC to ensure programmed increase in teachers' salaries commensurate with market rates taking into account affordability since salaries act as motivators to teachers' performance.

(ii) This study established that there is significant positive effect of non teacher unit cost on student's performance in KCSE examination. This study therefore recommends to the government to consider increasing FDSE. This will create ripple effect in terms of improved learning and hence good examination performance.

(iii) It was established that there is significant positive effect of school unit cost on student's performance in KCSE examination. This implies that schools who allocate increased expenditure on education performed well while schools with least public investment on education have low performance. This study recommends to the government that more private investors should be encouraged through structured incentive systems to participate in provision of education services to lessen pressure on government in providing this important service.

5.5 Suggestions for Further Research

(i) Studies of similar nature could be carried out in other counties in Kenya where no such studies have been undertaken to determine the effect of unit costs on students' academic performance in KCSE examinations in public secondary schools.

(ii) A study could be carried out on the effect of unit cost on students' academic performance in KCSE examinations in private secondary schools in Kenya.

(iii) A study could be carried out to determine how revenue collected by schools is used to improve academic performance in KCSE examinations in public secondary schools in Kenya.

(iv) A study could be carried out to determine teacher qualities that affect students' academic performance in KCSE examinations in public schools in Kenya.

REFERENCES

Agwanda, A.J. (2002*). A Study of Student Achievement in KCPE in Kisumu Town*. Unpublished Med. Thesis, Maseno University, Kenya.

Ayot, H.O. & Briggs, H. (1992). *Economics of Education.* Nairobi: Educational Research and Publication.

Bray, M. (2002). *The Costs and Financing of Education: Trends and Policy Implications*. Mandaluyong City: Asian Development Bank.

Chesswas, J.D. (1969). *Methodologies of Educational Planning for Developing Countries. I. Text*. Paris: UNESCO.

Cohen, L., Manion, L., & Morrison, K.P.B. (2000). *Research Methods in Education (5th Ed.).* London: Croom Helm.

Eshiwani, G. S. (1993). *Education in Kenya since Independence*. Nairobi: Printak.

Fabunmi, M., Brai-Abu, P., & Adeneji, I. A. (2007). *Class Factors as Determinants of Secondary School Students' Academic Performance in Oyoo State, Nigeria.* Retrieved September 13, 2007, from http://www.classfactors.net/fabunmi.pdf

Fraenkel, J.R., & Wallen, N.E. (2003). *How to Design and Evaluate Research in Education*. New York: McGraw Hill.

Fuller, B. (1997). *What Factors Raise Achievements in 3rd World Countries? Review of Educational Research Effects of Class Size*. Washington, DC: World Bank.

Graddy, K., & Stevens, M. (2005). *The Impact of School Resources on Student Performance: A Study of Private Schools in the United Kingdom.* Retrieved August 4, 2013, from http://www.digitalcommons.ilr.cornell.edu/ilrreview.pdf

Gravenir, F.Q. (1991*). An Assessment of Trends in Public Financing of Education in Kenya*. Kenya Journal of Education Vol. 5 (1). pp 2-15

Gravenir, F. Q. (2006). *Managing Schools with Data.* Nairobi: Institute of Open Learning Kenyatta University.

Greenwald, R. (1996). *The Effect of School Resources on Student Achievement*. Review of Educational Research 66(3), pp361-396

Hanushek, E. A. (2013). *Why Educators wages must be revamped now*. Retrieved August 23, 2013 from http://www.hanushek.net

Hedges, L.V., & Greenwald, R. (1996). "Have Times Changed? The Relationship Between School Resources and Student Performance". In Burtless, Gary ed. *Does Money Matter? The Effect of School Resources on Student achievement and Adult Success.* Washington, D.C.: Brookings Institution Press.

Heinemann, S. (1984*). Text Books and Achievements: What We Know*. Washington, DC: World Bank Staff Working Paper No. 288.

Hijazi, S. T., & Naqvi, S. M. M.R. (2007). *Factors Affecting Students' Performance: A Case of Private Colleges.* Retrieved September 13, 2007, from http://www.bangladesh sociology.org/BEJS% 203.1 %20 Naqvi.pdf

Hinton-Bayre, A. D. (2010). Calculating the Test-Retest Reliability Coefficient from Normative Retest Data for Determining Reliable Change. *Oxford Journals* 26(1), 76-77. Retrieved October 2, 2014, from http://acn.oxfordjournals.org/content/26/1/76

Hopkins, W. G. (2000). Quantitative Research Design. *Sport science* 4 (1). Retrieved October 2, 2014, from www.sportsci.org/jour/0001/wghdesign.html

Houtenville, J. A. & Conway, S.C. (2007). "Parental Effort, School Resources and Student achievement". *The Journal of Human Resources.* Vol.63 (2). pp 438-453. Retrieved August 23, 2014, from http://www.unh.edu/news/docs/Conway_May08.pdf

Jagero, N. O. (1999). *An Evaluation of the Factors Affecting the Quality of Education in Day Secondary Schools in Kenya: A Case Study of Kisumu District.* Unpublished Med. Thesis, Maseno University, Kenya.

Jagero & Ayodo (2009). *Free Secondary Education in Kenya: Comparative Costs of Education in Day & Boarding Schools*: Journal of Education Planning and Economics & Management Vol. 1

Kang, C. (2007). *Does Money Matter? The Effect of Private Educational Expenditures on Academic Performance*. Retrieved September 13, 2007, from http:// www.private tutoring /kang.pdf

Kenya National Bureau of Statistics. (2012). *Kenya Facts and Figures 2012,* Kenya National Bureau of Statistics. Nairobi: Retrieved August 23, 2014, from http://www.knbs.or.ke/index.php?option=com_phoca.

Kothari, C. (2004). *Research Methodology, Methods and Techniques.(2nd Ed.).* New Delhi: New Age International Limited Publishers.

Krueger, A.B. (2003). *Economic Consideration and Class Size*. Economic Journal 113 (485) pp 34-62

Kumar, R. (2005). *Research Methodology: A Step by Step Guide for Beginners. (2nd Ed.)*.New Delhi: Pearson Education Publishers.

Kombo, D.K., & Tromp. (2006). *Proposal and Thesis writing.* Nairobi: Pauline's Publications Africa.

Lewin K M. (2006): *Secondary Education In Africa (SEIA); Seeking Secondary Schooling In Sub-Saharan Africa: Strategies for Sustainable Financing,* Centre for International Education University of Sussex, Washington DC, world Bank. Retrieved August, 8, 2014, from http://www.siteresources.worldbank.org/Financing.pdf

Lewin, K.M. (2008). *Strategies for Sustainable Financing of Secondary Education in Sub-Saharan Africa: Africa Human Development Series.* Washington DC, Word Bank. Retrieved August, 8, 2014, from http://www.siteresources.worldbank.org/Financing.pdf

Mugenda, O.M. & Mugenda, G.A. (2003). *Research Methods: Qualitative and Quantitative Approaches*. Nairobi: African Centre for Technology Studies.

Mwiria, K. (1985). *The Harambee School Movement: A Historical Perspective.* Ph.D. Dissertation, Stanford University.

Mwiria, K. (2014). *Task Force to Probe Escalating School Fees*. Retrieved October 2, 2014, from http://www.vision 2030.go.ke/cms/vd.

Njeru, E., & Orodho, J. (2003a). *Education Financing in Kenya: Secondary School Bursary Scheme Implementation and Challenges*. Retrieved September 13, 2007, from http://www.ipar.or.ke

Njeru, E., & Orodho, J. (2003b). *Access and Participation in Secondary School Education in Kenya.* Emerging Issues and Issues and Policy Implications, IPAR Discussion Paper. No. 037/2003 ISBN 9966-948-27-9. Retrieved July 2, 2007, from http://www.ipar.or.ke

Noor, A. (1981). *Education and Basic Human Needs*. Washington, DC: World Bank

Nyaoga, O. M. (2003). *Factors that Influence Performance in Public Examinations in Kisii District*. Unpublished Med. Thesis, Maseno University, Kenya.

OECD. (2004). *Education at a Glance.* Paris: OECD.

Oguntoye, O. O. (1978). *Cost and Production Functions in Education: An Economic Analysis of Secondary Education in Ogun State of Nigeria*. Ph.D.Dissertation, University of Wisconsin.

Oguntoye, O. O. (1982). Determinants of Secondary Expenditures. An Empirical Study, Education and Development. *A Journal of the Nigeria Educational Research Council*. 2.

Okoth, D.M. (2012). *Unit Costs and Pupil Performance in Kenya Certificate of Primary Education: A Correlation Study of Primary Schools in Kisumu Municipality, Kenya*. Unpublished Med. Thesis, Maseno University, Kenya.

Olel, M. A. (2000). *Optimal Utilization of Educational Resources in Secondary schools: A Case Study of Kisumu District.* Unpublished Med. Thesis, Maseno University, Kenya.

Onyango, P. & Otieno, R. (2017, December 28). How Schools are Disobeying Fees Guidelines. Retrieved October 15,2018 from https://www.standardmedia.co.ke>education.

Orodho. J. A (2009). *Elements of Education and Social Science Research Methods*. Maseno Kenya: Kanezja Publisher.

Owino, W. & Abagi, O. (2000). *Cost-Sharing in Education and Health in Kenya.* Retrieved September 13, 2007, from http://www.ipar.or.ke.

Psacharopoulos, G., & Woodhall, M. (1985). *Education for Development: An analysis of investment Choices*. Washington D.C.: World Bank.

Raudenbush, S.W (2004). Schooling, Statistics and Poverty: Can We Measure school improvement? Education Testing Service. Retrieved October 15, 2014, from http://www.ets.org/Media/Education_Topics/pdf/ang

Raudenbush, S.W& Willms, D. (1995). The Estimation of School Effects. *Journal of Educational and Behavioral Statistics,* 20(4), 307-33. Retrieved October15, 2014, from http://sites.uci.edu/adlitresearch/files/2013/01/Raudenbush.

Republic of Kenya. (1988). *Sessional Paper No. 6 of 1988 on Education and Manpower Training for the Next Decade and Beyond*. Nairobi: Government Printer.

Republic of Kenya. (1999). *Report of the Commission of Inquiry into the Education System of Kenya*. Nairobi: Government Printer.

Republic of Kenya. (2002). *Vihiga Sub-County Development Plan 2002-2005*. Nairobi: Government Printer.

Republic of Kenya. (2003). *Statistical Abstract, 2003*. Nairobi: Government Printer.

Republic of Kenya. (2004). *Economic Survey*. Nairobi: Government Printer.

Republic of Kenya. (2005a). *Sessional Paper No. 1 of 2005 on a Policy Framework for Education, Training and Research.* Nairobi: Government Printer.

Republic of Kenya. (2005b). *Kenya Education Sector Support Programme 2005-2010: Delivering Quality Education and Training to All Kenyans.* Nairobi: Government Printer.

Republic of Kenya. (2007b). *Vihiga District Education Board: Vihiga District Prize and Trophy Presentation Day.* Nairobi: Government Printer.

Republic of Kenya. (2013a). *Vihiga Sub-County Education/Awards Day, 2013.* Nairobi: Government Printer.

Republic of Kenya. (2013b). *Vihiga County Development Plan*. Nairobi: Government Printer.

Republic of Kenya. (2013c). *The Basic Education Act, 2013*. Nairobi: Government Printer.

Republic of Kenya. (2015). *Code of Regulations for Teachers*. Nairobi: Government Printer.

Saitoti, G. (2003, March 12) "A Personal Communication." *East African Standard,* p.8

Sika, J.O. (2003). *Relationship Between Recurrent Expenditure and Performance in Secondary Schools in Siaya District.* Unpublished Med thesis. Maseno University, Kenya.

Sonstelie, J. (2007). *Aligning School Finance with Academic Standards: a weighted Student Formula Based on a survey of Practitioners*. Retrieved September 13, 2007, from http://www.irep.net/schoolfinance/sonstelie.pdf

Stephanie, T. (2002). *Factors Affecting Grade 3 Student Performance in Ontario: A Multilevel Analysis.* Retrieved September 13, 2007, from http://www.geo.macgill.ca/faculty/ontario.

Turner, W.D. (2010). *Qualitative Interview Design: A Practical Guide for Novice Investigators.* Retrieved August 14, 2018h from http:/www.researchgate.net/publication/265989424-Qualitative-Interview-Design.pdf

UNESCO. (1994). *Quality of Education for All Final Report*. Paris: UNESCO.

UNESCO. (2004). *Global Education Digest 2004: Comparing Education Statistics across the World*. Retrieved July 2, 2007, from http://www.uis.unesco.org/publication/GED2004

UNESCO. (2006). *Global Education Digest 2006: Comparing Education Statistics across the World.* Retrieved July 2, 2007, from http://www.uis.unesco.org/publication/GED2006

UNESCO. (2009). *Estimating the Costs of Achieving Education for All in Low Income Countries, Paris: UNESCO*. Retrieved August 5, 20014, from http:// www.unesco.org/iiep.pdf

Wolff, L. (1984). *Controlling the Costs of Education in East Africa: A Review of Data, Issues and Policies.* Washington, DC: World Bank Staff Working Paper No. 702.

World Bank. (1988). *Education in Sub-Saharan Africa: Policies for Adjustment, Revitalization and Expansion*. Washington, DC: World Bank.

APPENDICES

Appendix 1: Head teacher's Questionnaire.

Dear Sir/ Madam,

The purpose of this study is to explore the relationship that exists between unit costs and students' performance in KCSE examinations in Vihiga Sub-County. Please provide information as accurately as possible. There is no wrong answer. The information given will be treated with confidence and only used for purpose of this research only.

Section 1: School Information

Instructions: This information is to be answered by the **head teacher** only. Put a tick (√) where appropriate

1. Name of the school _____
2. How long have you taught? a) Less than 5 years ( ) b) 5-10 years ( ) c) 10-15 years ( ) d) over 15 years ( )
3. Category of the school:

   a) Provincial/County ( ) b) Sub-County ( )
4. School type:

   a) Boys ( ) b) Girls ( ) c) Mixed ( )
5. Is the school is boarding or day or both?

   a) Boarding ( ) b) Day ( ) c) Boarding and Day ( )

6. Please indicate the total number of student enrolment in your school as indicated below:

Year	**2010**	**2011**	**2012**	**2013**
Boarders				
Day Scholars				
Total				

Section 2: on Teacher Recurrent Expenditures (Non Teacher Unit Cost)

In my school the following were the budget per student per year per item.

ITEM NUMBER	**ITEM**	**2010**	**2011**	**2012**	**2013**
1	**Boarding**				
2	**Tuition**				
3	**Personal Emoluments**				
4	**P .T.A**				
5	**L .T.&T**				
6	**E .W &C**				
7	**Activity**				
8	**R .M &I**				

9	**Contingencies**				
10	**Education** **Improvement Fund**				
11	**Medical**				
12	**SMASSE**				
14	**Mock**				
15	**Motivation**				
16	**Holiday Tuition**				
17	**Others(specify)**				
18	**------**				
19	**------**				
20	**--------**				
	TOTAL				

Section 3: Teachers' Information (Teacher Unit Costs)

Please indicate the total number of teachers in the school according to the categories indicated below

CATEGORY	2010	2011	2012	2013
TSC TEACHERS				
NON TSC TEACHERS				
SUB TOTAL				
TOTAL				

Section 4: Please indicate the teachers' job groups and fill in the corresponding average annual gross salary in the years indicated below.

YEAR		JOB GROUP									
		Non TSC	J	K	L	M	N	P	Q	R	TOTAL
2010	No. of Teachers										
	Annual gross salary										
	Total annual gross salary										
2011	No. of Teachers										
	Annual gross salary										
	Total annual gross salary										
2012	No. of Teachers										
	Annual gross salary										
	Total annual gross salary										
2013	No. of Teachers										
	Annual gross salary										
	Total annual gross salary										

Section 5: Students' KCSE Performance

Please indicate the number of students who got the following grades in KCSE examination and their corresponding school mean score as indicated below.

Year	A	A -	B +	B	B -	C +	C	C -	D +	D	D -	E	Mean Score
2010													
2011													
2012													
2013													

Thank you

***Appendix* 2: Teacher's Questionnaire.**

Dear Sir/ Madam,

The purpose of this study is to explore the relationship that exists between teacher unit costs and students' performance in KCSE examinations in Vihiga Sub County. Please provide information as accurately as possible. There is no wrong answer. The information given will be treated with confidence and only used for purpose of this research.

Please put a tick (√) where appropriate.

1. How long have you taught?

a) Less than 5 years ( ) b) 5-10 years ( ) c) 10-15 years ( ) d) over 15 years ( )

2. **Please indicate your job group by putting a tick (√) and fill in the corresponding average annual gross salary in the years indicated below.**

YEAR	**JOB GROUP** **Put a tick (√)**								**ANNUAL GROSS SALARY**
2010	J	K	L	M	N	P	Q	R	
2011	J	K	L	M	N	P	Q	R	
2012	J	K	L	M	N	P	Q	R	
2013	J	K	L	M	N	P	Q	R	

Thank you.

Appendix 3: Head teacher's Interview Schedule.

1a) Would you describe the school's KCSE results from 2010-2013 as poor or good?

b) If poor, what do you attribute to the poor results?

c) If good, what factors contributed to the good results?

2. Among the various inputs such as textbooks, science equipment, motivation for teachers, adequate number of classrooms and financial investment by parents on the students, which ones contributed significantly to the school's KCSE results?

3. Has the government financial contribution to the school influenced the KCSE results from 2010-2013?

4. How did fees payment by parents assist the school in achieving the KCSE results from 2010-2013?

Thank you

Appendix 4: Document Analysis Guide.

NUMBER	ITEM	PURPOSE
1	The School Fees Structure 2010-2013	To establish non-teacher unit costs
2	The School KCSE examination Results 2010-2013	To establish the trend of students' performance in KCSE examinations
3	TSC Circulars of Salary Reviews 2010-2013	To establish teacher unit costs

Appendix 5: Pearson's Correlation Coefficient (r)

Coefficient (r)	Strength of relationship
-1 to -0.5 or 1.0 to 0.5	Strong
-0.5 to -0.3 or 0.3 to 0.5	Moderate
-0.3 to -0.1 or 0.1 to 0.3	Weak
-0.1 to 0.1	None or Very Weak

Appendix 6: Proposal approval

MASENO UNIVERSITY

SCHOOL OF GRADUATE STUDIES

Office of the Dean

Our Ref: PG/MED/00036/2006

Private Bag, MASENO, KENYA
Tel:(057)351 22/351008/351011
FAX: 254-057-351153/351221
Email: sgs@maseno.ac.ke

Date: 21st August, 2015

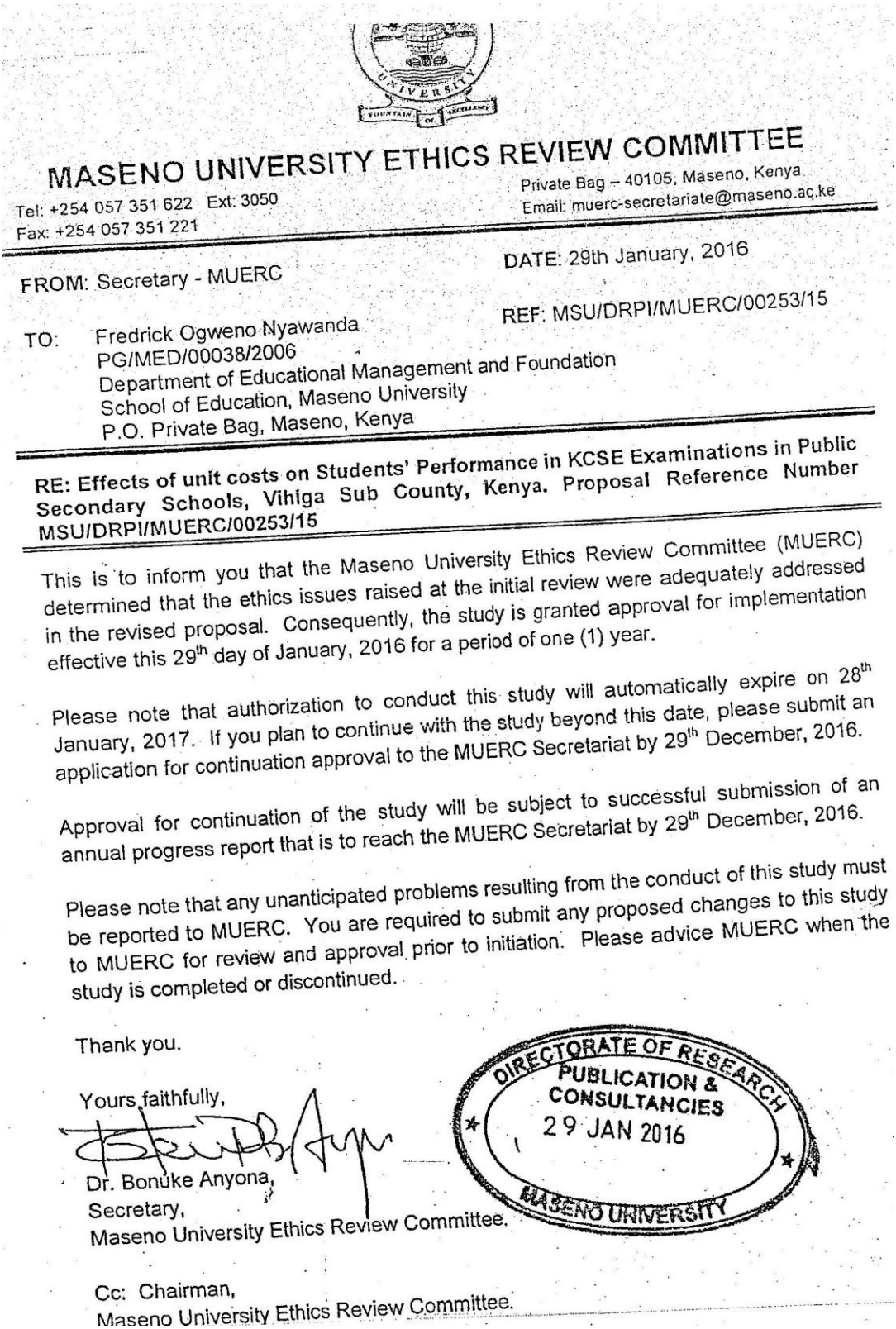
TO WHOM IT MAY CONCERN

RE: PROPOSAL APPROVAL FOR FREDRICK OGWENO NYAWANDA—PG/MED/00038/2006

The above named is registered in the Master of Education in Planning & Economics of Education of the School of Education, Maseno University. This is to confirm that his research proposal titled "Effects of Unit Costs on Students' Performance in KCSE Examination in Public Secondary Schools, Vihiga Sub-County, Kenya" has been approved for conduct of research subject to obtaining all other permissions/clearances that may be required beforehand.

Prof. P.O. Owuor
DEAN, SCHOOL OF GRADUATE STUDIES

Appendix 7: Research permit



MASENO UNIVERSITY ETHICS REVIEW COMMITTEE

Tel: +254 057 351 622 Ext: 3050
Fax: +254 057 351 221

Private Bag – 40105, Maseno, Kenya
Email: muerc-secretariate@maseno.ac.ke

FROM: Secretary - MUERC

DATE: 29th January, 2016

TO: Fredrick Ogweno Nyawanda
PG/MED/00038/2006
Department of Educational Management and Foundation
School of Education, Maseno University
P.O. Private Bag, Maseno, Kenya

REF: MSU/DRPI/MUERC/00253/15

RE: Effects of unit costs on Students' Performance in KCSE Examinations in Public Secondary Schools, Vihiga Sub County, Kenya. Proposal Reference Number MSU/DRPI/MUERC/00253/15

This is to inform you that the Maseno University Ethics Review Committee (MUERC) determined that the ethics issues raised at the initial review were adequately addressed in the revised proposal. Consequently, the study is granted approval for implementation effective this 29th day of January, 2016 for a period of one (1) year.

Please note that authorization to conduct this study will automatically expire on 28th January, 2017. If you plan to continue with the study beyond this date, please submit an application for continuation approval to the MUERC Secretariat by 29th December, 2016.

Approval for continuation of the study will be subject to successful submission of an annual progress report that is to reach the MUERC Secretariat by 29th December, 2016.

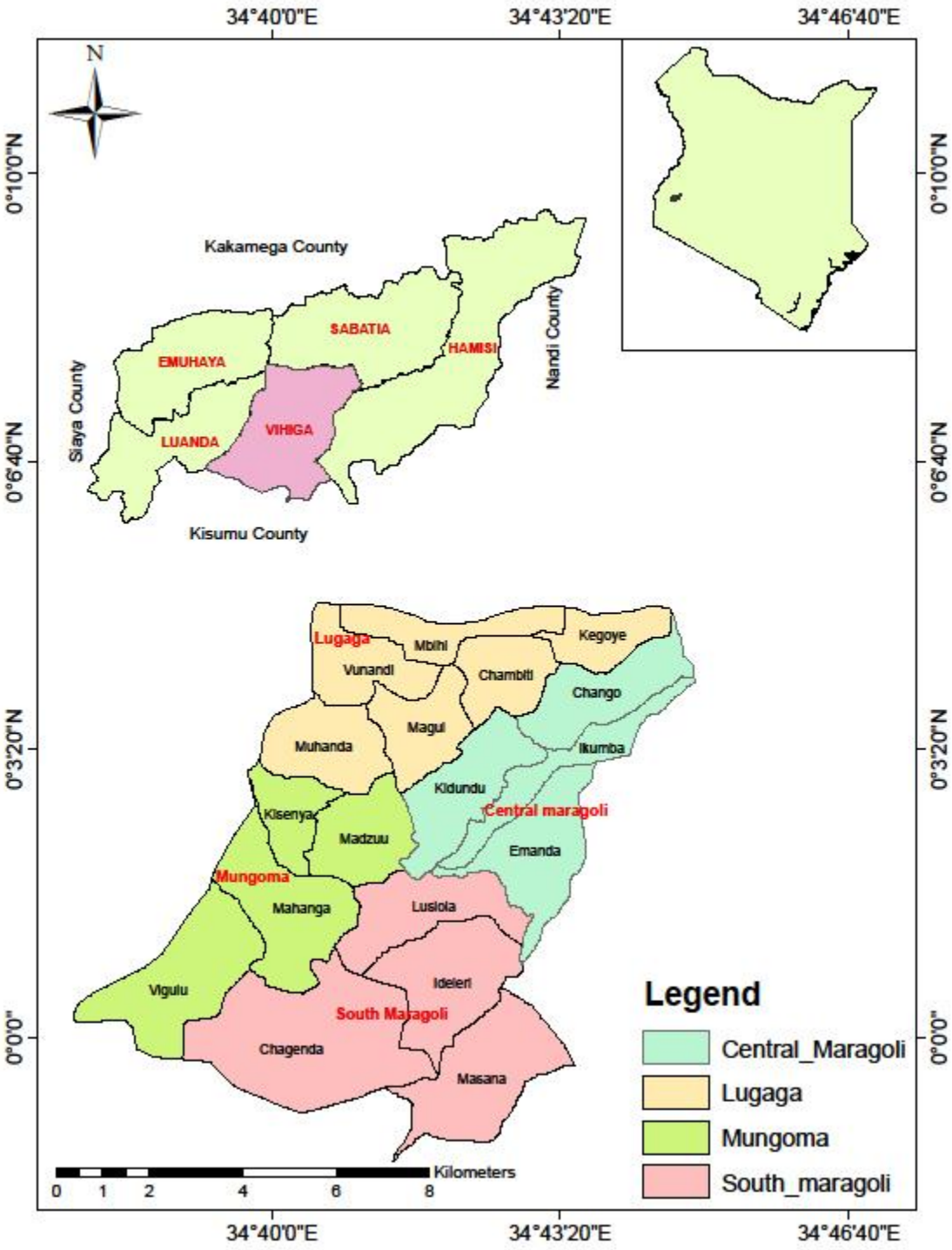
Please note that any unanticipated problems resulting from the conduct of this study must be reported to MUERC. You are required to submit any proposed changes to this study to MUERC for review and approval prior to initiation. Please advice MUERC when the study is completed or discontinued.

Thank you.

Yours faithfully,

DIRECTORATE OF RESEARCH PUBLICATION & CONSULTANCIES 29 JAN 2016 MASENO UNIVERSITY

Dr. Bonuke Anyona,
Secretary,
Maseno University Ethics Review Committee.

Cc: Chairman,
Maseno University Ethics Review Committee.

Appendix 8: Vihiga Sub-County Map