UNIT COST MANAGEMENT AND LEARNERS’ ACADEMIC PERFORMANCE:  
AN ANALYSIS OF DAY AND BOARDING SECONDARY SCHOOLS IN NANDI 
COUNTY, KENYA.

BY

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PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE 
AWARD OF THE DEGREE OF DOCTOR OF PHILOSOPHY IN 
EDUCATIONAL MANAGEMENT DEPARTMENT OF 
EDUCATIONAL MANAGEMENT 
AND POLICY STUDIES 
MOI UNIVERSITY 

ELDORET, KENYA 

2019
DECLARATION

DECLARATION BY THE CANDIDATE

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EDU/D.PHIL.A/1011/13

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This thesis has been submitted with our approval as University Supervisors.

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DEDICATION

I dedicate this study to my beloved wife, Florah Jerotich Ngetich, our son Ryan Kiprop Yego and the late baby Jepchumba Rhian Ngetich. Their company in my life was an immense source of encouragement to work harder with a sense of great fulfillment. I cannot forget the days when I was doing data collection, when every morning the late Rhian could say “smart…” on realizing I was set to go out. I cannot forget my parents the late William Mwei and Susana Mwei. Their continuous support and encouragement was the foundation of my strong point throughout my postgraduate studies. I cannot forget my parents- in- law, Martha Magut and Thomas Magut for their spiritual nourishment during the course of this study.
ACKNOWLEDGEMENT

This study would not have been achievable were it not for the some people and institutions whose invaluable prop up, I would like to recognize. First I sincerely thank my supervisors Dr. Kosgei Zachariah and Dr. Chumba Sammy both of Moi University; School of Education, for their guidance, support and encouragement in every step of this study. I also wish to acknowledge Moi University for giving me a chance to undertake a doctorate degree in Educational Management. Many thanks go Dr. Joseph Lelan, the Head of Department of Educational Management and Policy studies- Moi University and all the staff members for their support. I am indebted to all lecturers who taught various courses for this degree programme. My gratitude goes to my student colleagues for their academic support during my postgraduate studies. I am particularly thankful to the Deputy County Director of Education- Nandi County and his team for their assistance at the time of carrying out research work. My sincere thanks also go to the Secondary School principals in Nandi County and their school Accounts staff who dedicated their time to participate in this study. To all, I say thank you and may God bless you.
ABSTRACT

In the face of the rising cost of education that prompted the large amount of resources be allocated to the secondary education sector, students’ academic performance is expected to be better. This study analyzed the influence of unit cost on learners’ academic performance in the types of secondary school in Nandi County, Kenya. Specifically the study sought to; examine unit cost of the types of secondary schools, examine academic performance of learners in the types of secondary schools, examine the influence of unit cost on academic performance of learners in the types of secondary schools and explore strategies for effective management of unit cost to enhance academic performance. This study was guided by Cost Function derived from the Education Production Function theory. This study adopted a post-positivist worldview as its philosophical paradigm; the study employed a mixed method design and cross-sectional survey as a research strategy. The study targeted all the principals in 186 public secondary schools in Nandi County. The study employed systematic random sampling. A sample size of 123 was determined by use of the published table by Krejcie and Morgan. Questionnaire and document analysis were the instruments of data collection. A pilot study was used in determining the reliability where Pearson Product Moment Coefficient (r) of 0.807 was obtained. Validity of the research tools was realized through experienced team of supervisors who carefully and critically examined the instruments. Data was analyzed using frequency, means, range, percentages, t-test and linear regression analysis. It was found out that, average unit cost for the sampled schools for the period 2012-2015 was Ksh. 22,263 and Ksh. 54,828 for Day and Boarding secondary schools respectively. Furthermore, the findings revealed that, there was a significant difference in unit cost between Boarding and Day secondary schools in Nandi County (t(121) = 31.516, p = 0.000); in addition, academic performance for the period (2012-2015), recorded an average mean of 7.1184 and 4.7391 for Boarding and Day secondary schools respectively. It was found out that, there was a significant difference in academic performance between Boarding and Day secondary schools (t(121) = 9.990, p = 0.000); From the study, there was a positive significant (p=0.000) relationship between academic performance and unit cost in Boarding secondary schools t(28) = 4.192, p<0.05. Similarly, there was a positive significant (p=0.014) relationship between academic performance and unit cost in Day secondary schools, t(91) = 2.503, p<0.05. The study revealed that, for both Day and Boarding secondary schools, there was a positive significant relationship between academic performance and unit cost. However, performance of learners in Boarding schools was better than those in Day schools. The study makes recommendation that, to manage unit cost of secondary education, there is need to; appreciate the concept of cost unit cost, improve effectiveness and efficiency of school management, effectively utilize monetary resource, appropriately allocate resources and practice prudence in financial management. The findings of this study will generate ideas for better and more resourceful cost management in secondary schools, which is useful for policy makers and managers in education sector.
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<th>Description</th>
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<tbody>
<tr>
<td>BOM</td>
<td>Board of Management</td>
</tr>
<tr>
<td>CDE</td>
<td>County Director of education</td>
</tr>
<tr>
<td>CDF</td>
<td>Constituency Development Fund</td>
</tr>
<tr>
<td>FDSE</td>
<td>Free Day Secondary Education</td>
</tr>
<tr>
<td>GER</td>
<td>Gross Enrolment Rate</td>
</tr>
<tr>
<td>GOK</td>
<td>Government of Kenya</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>KESSP</td>
<td>Kenya Education Sector Support Programme</td>
</tr>
<tr>
<td>KCSE</td>
<td>Kenya Certificate of Secondary Education</td>
</tr>
<tr>
<td>KCPE</td>
<td>Kenya Certificate of Primary Education</td>
</tr>
<tr>
<td>KIPPRA</td>
<td>Kenya Institute for Public Policy Research and Analysis</td>
</tr>
<tr>
<td>LDC</td>
<td>Less Developed Countries</td>
</tr>
<tr>
<td>MoEST</td>
<td>Ministry of Education Science and Technology</td>
</tr>
<tr>
<td>NACOSTI</td>
<td>National Commission for Science, Technology and Innovation</td>
</tr>
<tr>
<td>NER</td>
<td>Net Enrolment Rate</td>
</tr>
<tr>
<td>OECD</td>
<td>Organization of Economic Cooperation and Development</td>
</tr>
<tr>
<td>PCR</td>
<td>Pupil Completion Rate</td>
</tr>
<tr>
<td>PTA</td>
<td>Parents Teachers Association</td>
</tr>
<tr>
<td>PTR</td>
<td>Pupil Teacher Ratio</td>
</tr>
<tr>
<td>ROK</td>
<td>Republic of Kenya</td>
</tr>
<tr>
<td>SDGs</td>
<td>Sustainable Development Goals</td>
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</table>
CHAPTER ONE
INTRODUCTION TO THE STUDY

1.1 Introduction to the Chapter
This chapter gives the background of the study, the statement of the problem, the purpose of the study, the research objectives, the research questions and the hypothesis. It also presents the justification for the study, significance of the study, assumptions of the study, the scope of the study, limitations of the study, the theoretical framework and conceptual framework. The chapter ends with the operational definition of terms.

1.2 Background of the Study
The greatest bequest and effective instrument a nation can present to its youth is education (Republic of Kenya, 2007; Digolo, 2006). Given the importance of education to an economy, a strong and healthy society is nurtured all the way through by provision of quality, accessible and relevant education. Relevant education enables those who get hold of it to secure requisite knowledge, skills and attitudes for better appointments in the rest of their lives. Those who have received education are aware of their health requirements, are law abiding, industrious and internationally competitive. To provide education that is relevant, quality and accessible to the majority of the population, enormous resource allocation for education sector is required. Therefore massive financial and other resources going into education in most of the developing countries may be justified. Education is one of the most central pillars of socio-economic development in Kenya. Kenya’s Vision 2030, which is the country’s futuristic development blue print, attributes education to be one of the social pillars together with the economic and political pillars that are considered foundation stone in the
transformation of Kenya into newly industrializing middle income economy by the year 2030. Kenya’s vision 2030, for the education sector, is to have globally competitive quality education, training and research. The course to vision 2030 is to provide quality education so as to empower citizens and make them responsible, productive and entrepreneurial. To accomplish the vision, premeditated areas namely; access, quality, equity, science, technology and innovation in education, have been earmarked for support mainly due to their impacts on the economic, social and political pillars of Vision 2030 (Republic of Kenya, 2007). The guiding principle is that for education to be run as a business-like model, a keen eye on cost has to be kept as maximization of returns are sought.

In Kenya, as in other developing countries, the provision of quality education and relevant training to all is important for achieving the national development agenda. The government of Kenya has therefore focused its main attention on formulating appropriate education policies to ensure maximum development of the human resources who are essential for all aspects of development and wealth creation through industrialization. All education stakeholders recognize that quality education at all levels will enable Kenyans to utilize their natural resources efficiently and effectively in order to attain and maintain desirable lifestyles for all Kenyans.

In Kenya, cost of education has continued to rise (Ngetich, Wambua & Kosgei, 2014). The burden of this rapidly rising cost of education has been shouldered majorly by parents through the policy of cost sharing (Republic of Kenya, 1999). Over the years,
Kenyan government has also been allocating huge resources to education sector in general and more so to the secondary education sub-sector. The situation of channeling more and more resources to education sector has been aggravated due to rising demand for education in Kenya. Ministry of Education Science and Technology (2005) notes that since independence the number of students enrolled at various levels of education has substantially increased. At the secondary school level, enrollment grew from 30,000 students in 1963 to 862,906 students in 2003. The total enrolment in both public and private secondary schools rose by 56.3 per cent from 1.6 million in 2010 to 2.5 million in 2015 (appendix 5). The survival rate at secondary school level from Form 1 to 4 declined from 90.0 per cent in 2013 to 88.4 per cent in 2014. Number of public and private secondary schools in the country increased by 52.2 per cent from 6,201 in 2010 to 9,440 in 2015 (appendix 4) (Republic of Kenya, 2015). Even with the recorded growth of these secondary schools, the numbers of secondary schools are not adequate to cope with the large number of learners completing primary education.

Total allocation to ministry of education rose by 89 per cent from Ksh179 billion in financial year 2010/2011 to Ksh319 billion in 2015/2016 financial year; while allocation to secondary education during the same period increased by about ten times from just Ksh. 3 billion in 2010/2011 financial year to Ksh. 32 billion in 2015/2016 financial year (Republic of Kenya, 2016). Again, even with such huge increase of financial allocation, there are still financial shortages in the secondary schools. Thus without a working partnership on financing of education in Kenya, it will be hard to address the problem of poor access, gender parity and low quality. The high number of poor citizens, who cannot
afford secondary school fees, makes matters worse; given the current household financial burden, where the average expenditure by the households, amounts to 200% of the total per capita income measured by consumption of the poorest 20% of the Kenyan household (Republic of Kenya, 2016).

Given the lion share of financial resources consumed by education sector compared to other sectors in the national budget, it should be noted that, Kenya just like any other developing country, does not have inexhaustible source of funds and cannot, therefore, keep on allocating more and more of the public revenue to education sector (Kosgei & Rono, 2003). This observation tends to agree with Psacharopoulos and Woodhall (1985) who observed that although the social and private rates of return to investment in education still seem to be high and the private demand remains strong, most governments are finding it hard to allocate an increasing share of public expenditure to education. The import of this is that, while acknowledging that there are higher benefits to the society and to the individuals by providing education to its citizens, the little resources available and allocated to education sector, should be put to proper use so that optimal results are achieved.

Resource inputs have a very important role in the education process. Students’ achievements is collective of the present and the previous educational resource inputs (Ekanem & Ekpiken, 2013). Coombs (as cited in Ngetich, et al., 2014) noted that with too little money, education could be helpless; with sufficient supply, its troubles become more controllable even though they do not disappear completely. These lessons point out a momentous need for institutions of learning (secondary school sub-sector included) to
come up with ways of providing financial resources and proper utility of these resources all the time. There is need for effective use of resource inputs in order to maximize educational performance from the little resources at our disposal. Longe (as cited in Ekanem & Ekpiken, 2013) notes, educational resources utilized in actual performance (expressed as cost per unit) can serve as a guide to effectively achieve educational development opportunities; they note that unit cost of education is cost per unit and helps management in realizing targets.

However, MoEST (2003) remarks that academic performance is influenced by numerous factors ranging from availability of sufficient teaching and learning resources, quality of human resources available and the effectiveness of school management. Instructional materials determine the effectiveness of teaching and learning, and therefore, the academic performance (MoEST, 2003). Chiuri and Kiumi (2005) observe that internal efficiency of an education system largely depends on the amount of resources used. In order to provide sufficient teaching and learning resources, physical facilities and employ required human resources, there are major cost implications; there is need for adequate finances. Finances go into paying salaries for human resources and for acquisition of other inputs required in the education process. In an event where the cost requirement has not been achieved, the consequences will in most cases, lead to poor performance.

Anderson (1992) states that education costs are increasing and funds are hard to raise. This statement highlights the financial constraints facing, not only, the educational sector, but also, other sectors of the society as a whole. These other sectors’ demand for
attention, just like education sector in equal measure, because of their importance in the economy. Therefore, because of the increasing financial constraints on educational investments and other competing obligations, developing countries are not only searching for alternative ways of financing education but they are also paying closer attention to reduced costs and wastage by improving on efficiency with which resources are being utilized (Boit, 1998). Efficiency is the question of how best the little resource inputs can be utilized to achieve maximum output. In education, efficiency is the ability of education system to meet its objective and produce quality and relevant graduates at minimal cost possible. Education consumes about 20% of developing country’s Gross National Product (GNP); it is without doubt that there is a heightened awareness of the need to maximize the benefits obtained from scarce public resources which have alternative uses (Hywel, 1987).

In a study by KIPPRA (2006) it was found out that unit cost analysis is important in establishing what actually constitutes any form of investment in education. Education as an investment good encompasses costs that go into teaching and learning processes. Ekanem and Ekpiken (2013) observe that, both financial analysis (maximization of returns on investment) and economic analysis (achieving the best results) are the points of consideration by all stakeholders in education sector; it is because of this idea that unit cost of education (cost per unit/ cost per student) is considered as a framework for investment decision making in education sector. Costs of teaching and non-teaching salaries, funds for scholarships and bursaries, maintenance, laboratories and equipment and costs for learning materials, are directly related to enrolment levels in schools
(Ekanem & Ekpiken, 2013). The study by KIPPA (2006) further found out that, a private cost is constituted by household secondary education expenditure in fees, while public costs are constituted by public unit expenditure at this level. Therefore, based on school fees and public expenditure, it is possible to compute unit costs from major secondary education inputs.

According to MoEST (2015), a taskforce report on financing of secondary schools in Kenya made recommendations on realistic unit cost of secondary education; in this arrangement, the government would meet the full cost of examination for KCSE. Furthermore, schools shall spread school fees into the three school terms at the ratio of 50:30:20; the government appreciates schools that have been levying fees below the ceilings and urges them to continue with that trend (MoEST, 2015). There has always been a debate on the cost of educating a student in our secondary schools in Kenya. The fees charged vary from one school to another. The fees structure often reflects difference in various vote heads and allocation. According to the government fees guide line, the various vote heads are allocated money which is expected to be utilized by the secondary schools. This allocation varies depending on whether a school is Day school, a Boarding school or Special needs school; government subsidy stands at Ksh. 12,870 per student for both the Day schools and Boarding schools and Ksh. 32,600 per student in the Special needs schools. Parents are expected to top up this subsidy by up to Ksh. 9,374 for Day schools, Ksh. 53,553 for Boarding schools and Ksh. 37,210 for the Special needs schools; this brings the total school fees payable per student to Ksh. 22,244 for Day schools, Ksh. 66,424 for Boarding schools and Ksh. 69,810 for the Special needs schools. Notable
amount in this fees structure is the BES vote head which is allocated Ksh. 32,385 per student per year in Boarding schools and Special needs schools.

Unit cost is often measured per year and is useful for diagnosing, comparing, evaluating, solving the prevailing education problems for logical and systematic decision making. According to MoEST (2002) Unit Cost of Education considers total recurrent expenditure in a school and the total enrolment in that school and this represents the total amount per student a school spends in providing education in that particular year. The importance of Unit Cost (expenditure per student) is its association to instructional costs including all expenditures on instructional resources such as school facilities, teachers’ salaries, non teacher salaries, textbooks, stationery as well as other instructional materials. Investment in education is typically financed by the state because education is critical for economic growth and poverty alleviation. In most countries, households contribute privately to the education of their children. GOK (2005) observes that expenditure on education is supported by revenues collected by the school such as fees (household finances) paid to the school in addition to government allocations and other expenses incurred by the government in providing education.

As documented in the Kenya Education Sector Support Programme (KESSP) 2005-2010, the government of Kenya has taken several steps to improve secondary education. Yet, it is regrettable that secondary education has been characterized by unsatisfactory performance, in national examinations. According to Economic survey 2016, at the national level, although the number of candidates who scored a minimum university entry score of C+ and above increased by 21.4 per cent from 123,374 in 2013 to 149,717 in
2014. The numbers who scored “A” dropped to 2,636 in 2015. Table 1.1 below shows total expenditure for the Ministry of Education and total expenditure for secondary education sub sector for the period 2010/2011 to 2015/2016 financial years. The table also shows number of KCSE candidates, mean score and mean grade for the same period.

**Table 1.1 Total Expenditure and KCSE Performance for the MoEST for the period 2010/11 to 2015/16.**

<table>
<thead>
<tr>
<th>Description</th>
<th>2010/11</th>
<th>2011/12</th>
<th>2012/13</th>
<th>2013/14</th>
<th>2014/15</th>
<th>2015/16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Expenditure for the MoEST</td>
<td>179,000</td>
<td>207,460</td>
<td>260,122</td>
<td>251,212</td>
<td>284,165</td>
<td>319,425</td>
</tr>
<tr>
<td>Total Expenditure for Secondary Education</td>
<td>3,026</td>
<td>19,198</td>
<td>25,076</td>
<td>22,803</td>
<td>29,862</td>
<td>32,996</td>
</tr>
<tr>
<td>Canditature</td>
<td>354,341</td>
<td>410,586</td>
<td>432,443</td>
<td>445,520</td>
<td>482,133</td>
<td>512,630</td>
</tr>
<tr>
<td>Means Score</td>
<td>5.14</td>
<td>5.24</td>
<td>5.17</td>
<td>5.12</td>
<td>5.39</td>
<td>5.44</td>
</tr>
<tr>
<td>Mean Grade</td>
<td>C-</td>
<td>C-</td>
<td>C-</td>
<td>C-</td>
<td>C-</td>
<td>C-</td>
</tr>
</tbody>
</table>

*Source: Economic Survey 2016*

From Table 1.1 above, total national government expenditure for the Ministry of Education increased from 179 billion in the year 2010/2011 to 207 billion in 2011/2012, before getting higher to 260 billion in 2012/2013 and to 251 billion in 2013/2014 to 319.4 billion in the year 2015/2016. This was 78.2% increase in total expenditure for education sector. In the same period, total national government expenditure for secondary education rose from 3 billion in 2010/2011 to 32.9 billion in the year 2015/2016 this was a sharp increase of 996% or approximately ten times higher than it was in the financial year 2010/2011. From Table 1.1 above, the number of KCSE candidates nationally grew by 44.7 per cent from 354,341 in 2010 to 512,630 in 2015. It can be noted that over this
period, while total expenditure for the ministry of education and that of the secondary subsector in particular increased tenfold, at the national level, KCSE performance remained at a mean score of just five (5) points out of the possible twelve (12) points. The average grade has been C minus yearly for the entire period.

At the County level, Table 1.2 below shows the Nandi County trends, in KCSE candidates enrolled and mean grade attained between 2010 and 2015.

**Table 1.2 Nandi County Trends in KCSE Mean Grade - (2010-2015)**

<table>
<thead>
<tr>
<th>Year</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nandi County</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Candidature</td>
<td>6,784</td>
<td>8,228</td>
<td>8,964</td>
<td>9,380</td>
<td>10,276</td>
<td>11,204</td>
</tr>
<tr>
<td>Means Score</td>
<td>5.32</td>
<td>5.41</td>
<td>5.59</td>
<td>5.38</td>
<td>5.71</td>
<td>5.98</td>
</tr>
<tr>
<td>Average Grade</td>
<td>C-</td>
<td>C-</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
</tbody>
</table>

*Source: CDE office, Nandi County (2016)*

From Table 1.2 above, in Nandi County the number of KCSE candidates increased by 65.16 per cent from 6,784 in 2010 to 11,204 in 2015. However, over the same period, KCSE mean score paltry improved from 5.32 to 5.98. The mean score remained at between C minus and C plain out of a possible ‘A’.

Even with huge government allocation for secondary education, secondary schools are finding it difficult to meet expenditure of some vote heads such as personal emoluments (Masese, 2005). Public secondary schools have been raising more funds through the PTA vote head to top up those vote heads whose allocation proved insufficient (Kirungu, 2005). If the amounts allocated for a vote head prove inadequate, then it implies that the
amount of expenditure anticipated is less than the actual cost of maintaining a student in school in a year (unit cost) which in turn affects the provision of the required teaching and learning resources for better academic achievements.

1.3 Statement of the Problem

The cost of education at the secondary school level is gaining importance not only because of rising demand but also with respect to issues of relevance, affordability, quality and access to secondary education. Investment in education is a mission that involves money spent as well as the alternative forgone (opportunity cost) in an attempt to provide education, be it explicit cost (in the form of cash payment) or implicit cost (use of resources without corresponding cash payment)(Ekanem & Ekpiken, 2013; Adeyemi, 1998). KIPPERA (2007) noted that there were inter-school variations in the composition and levels of fees payments and the fees are not uniform in all schools. Government of Kenya has issued fee guidelines and put in ceilings by which public schools were expected to follow. The idea was to address the question of affordability of paying fees by parents. However, secondary school management continues to charge more than the provision in this guideline for their category for reasons that the threshold is not realistic. The question then was, what was the level of unit cost and how was the performance given at that level of unit cost?

Establishing unit cost of secondary education is necessitated by the reality that unit cost is determined by the amount of expenditure by the schools and enrolment in that school. The picture depicted by expenditure per student (unit cost) is the financial ability of the school to provide the essential educational inputs and creating a conducive environment
which affect students’ academic performance. Furthermore, establishing the unit cost of secondary education sub-sector and its relationship to academic performance is coming at a time when the cost of education is rising in the middle of high poverty levels and competing needs in Kenya. Kenyans spend most of their income on education. This lowers their propensity to save hence low investment which leads to serious implications on their ability to meet the costs of education and other needs. Thus, put them in a poverty trap; again making them unable to finance education of their children at all other levels.

Education being one of the central pillars of socio-economic development has awakened the consciousness of all education stakeholders. The result of this is ballooning demand for education. Secondary school system in Kenya recorded increased enrolment from 1.6 million in 2010 to 2.5 million in 2015. Because of this demand, cost of education at government and household level has been rising and continue to rise; Kenyan government expenditure for secondary education alone has increased from 3 billion in 2010 to 32 billion in 2015. This scenario of increasing cost in secondary education can be attributed to each individual student (unit cost). Given that the fundamental way of measuring learner outcomes is at the national examination, in this case at the KCSE level, it is regrettable that secondary education has been characterized by performance stagnating at grade ‘C’ minus in national examinations (Republic of Kenya, 2016). The question we attempt to answer is does educational cost and cost per student (unit cost) in particular have any bearing on the learner outcomes?
Although, Studies by Nafukho (1995), Ngala (1996), Kosgei and Rono (2003), Makori and Onderi, (2014) and Ngetich et al., (2014) analysed cost per student (unit cost), optimal school size and economies of scale, these studies did not attempt to link cost per student (unit cost) to academic performance at KCSE level. The current study attempts to establish cost per student (unit cost) and examine its influence on learners’ academic performance in the types of secondary school in Nandi County, Kenya.

1.4 Purpose of the Study

The purpose of this study was to analyze the influence of unit cost on learners’ academic performance in the types of secondary schools and develop strategies for effective management of unit cost in Kenya.

1.5 Objectives of the Study

This study was set to achieve the following objectives:

i. To examine unit cost of Day and Boarding secondary schools in Nandi County, Kenya.

ii. To examine the academic performance of learners in Day and Boarding secondary schools in Nandi County, Kenya.

iii. To examine the influence of unit cost on academic performance of learners in Day and Boarding secondary schools in Nandi County, Kenya.

iv. To explore strategies for effective management of unit cost in order to enhance academic performance of learners in secondary schools in Nandi County, Kenya.

1.6 Research Questions

This study sought to answer the following questions:
i. What is the unit cost of Day and Boarding secondary schools in Nandi County, Kenya?

ii. What is the academic performance of learners in Day and Boarding secondary schools in Nandi County, Kenya?

iii. What is the influence of unit cost on academic performance of learners in Day and Boarding secondary schools in Nandi County, Kenya?

iv. What are the strategies for effective management of unit cost in order to enhance academic performance of learners in secondary schools in Nandi County, Kenya?

1.7 Research Hypotheses

This study tested the following hypotheses:

**HO₁:** There is no statistically significant difference in unit costs of Boarding and Day secondary schools in Nandi County, Kenya.

**HO₂:** There is no statistically significant difference in academic performance of learners in Boarding and Day secondary schools in Nandi County, Kenya.

**HO₃:** There is no statistically significant relationship between unit cost and academic performance of learners in Boarding secondary schools in Nandi County, Kenya.

**HO₄:** There is no statistically significant relationship between unit cost and academic performance of learners in Day secondary schools in Nandi County, Kenya.

1.8 Justification for the Study

The underlying reason for this study was the fact that the budgetary allocation to education sector has been increasing in the recent past. With the introduction of subsidy for secondary Education and increasing demand for more teachers due to rising
enrolment, has led to increase in education cost. The burden is felt by all the stakeholders in the education sector. With enormous resources allocation to education sector and more specifically to the secondary school sub-sector, performance of learners in the national examinations is expected to respond in equal measure. Nasongo (2009) notes that, instructional materials have a strong and significant relationship to quality of academic performance. There is a cost implication in acquiring additional instructional materials. The ever rising education cost is a trend which is of concern to most education stakeholders. It is expected that to achieve vision 2030 and other target based goals such as the SDGs; which emphasize sustainable development goals through inclusive and quality education for all and promoting lifelong learning, there is need to provide a quality education which is the foundation to improving people’s lives and sustainable development. Quality, relevant and accessible education for the children requires adequate financing of education, these remains a challenge. Cost of secondary education can be linked to individual learner hence the idea of unit cost (cost per student per year). This study is therefore justified for it seeks to analyze the influence of unit cost on learners’ academic performance in the types of secondary school in Nandi County, Kenya.

1.9 Significance of the Study
The information resulting from the findings of this study contributes to the evolving body of research on how optimally we should allocate resources in educational institutions in general and at the secondary school level in particular so as to yield positive impact on learners’ academic performance. Furthermore, to the policy makers, school administrators and managers, the findings of this study is relevant and useful ingredients
on policy decision on the question of cost of secondary education. The study makes appropriate strategies of managing the rising cost of secondary education in the midst of competing needs. The study provides greater insight to school managers and policy makers about the influence of unit cost on academic achievements of learners. Furthermore, it is envisaged that the knowledge obtained from this study will also form a basis for further research on the relationship between educational cost and academic performance. This will lead to the generation of new ideas for a better and more resourceful cost management in secondary schools and other educational institutions in Kenya and the rest of the world. Unit cost analysis is important for cost-benefit and cost-effectiveness analysis. The awareness accruing from this study will guide the growing debate on how cost of secondary education can be dealt with and the suggestion of providing free secondary education in Kenya. In general, the study contributes significantly to decision-making, planning and monitoring cost in secondary education.

1.10 Assumptions of the Study

In this study the following assumptions were made;

i. That the relevant and updated records on expenditure would be obtained from the schools.

ii. That the respondents would willingly participate and give relevant and reliable information.

iii. The unit cost of education has a bearing on provision of instructional resources and hence students’ academic performance.

iv. That data collected for unit cost and performance was normally distributed and that there was homogeneity of variance.
1.11 Scope of the Study

This study was delimited to public secondary schools in Nandi County, Kenya. Secondary schools selected are those which had sat for the KCSE for at least once. Due to the large number of secondary schools in the area of study, school were sampled using systematic random sampling so as to achieve representation from the school types namely; Day secondary schools and Boarding secondary schools. The respondents to the study were all the secondary school principals from the sampled schools. The study dealt with unit cost and academic performance for the period between 2012 and 2015. Unit cost was determined using annual recurring expenditures only. Due to the effects of wear and tear, fixed cost was not included in the study. Furthermore, any other measure of students’ performance outside academic performance at the KCSE level was outside the scope of this study.

1.12 Limitations of the Study

Limitations of a study are those uniqueness of design or methodology that influences the relevance or interpretation of the result of a study; they are the constrictions on the generalizability and efficacy of findings that are as a result of the manner in which the design of a study is preferred and the methods used to launch internal and external validity (Orodho, 2004; Kumar & Phrommathed, 2005; Taylor, Bogdan & DeVault, 2015).

This study was limited to analysis of the influence of unit cost on learners’ academic performance. Thus, the study did not measure the contribution of other factors to learners’ academic performance such as intelligence quotient, social economic status,
peer group effects, community level factors and family background. The element of cost that goes into each student due from fixed cost was not included in the study, thus fixed costs incurred by schools was not included in this study. Therefore, the unit cost might change when the fixed costs are included. However, since fixed costs for all the schools was excluded, the unit cost determined was useful in the analysis of the influence of unit cost on learners’ academic performance in the types of secondary school in Nandi County, Kenya.

The study aimed at determining unit cost of secondary school in Nandi County. Ideally this study should be conducted in all the schools in the country. The location of Nandi County may limit its generalizability to other Counties. However, this study should be useful for exemplification and the beginning of a serious discussion. Furthermore, education cost is affected by macro-economic fundamentals such as inflation and exchange rates. Therefore, the unit cost may not apply to all schools in the country at different periods in time. However, the study was carried out for the same period of time for all the secondary schools used for the study.

1.13 Theoretical Framework

Theoretical framework is important for this study. It was considered because it takes the research to a new view of the research problem, enables the researcher understand the whole territory of the problem and to be able to conceptualize the topic as emanating from the large society; by so doing the researcher is able to acknowledge the problem from a wider perspective rather than a narrow personalized way; the result of this is that the researcher will be objective in the whole study (Kombo & Tromp, 2006; Creswell,
2013; and Smith, 2015). According to Babbie (2007) a Theoretical Framework can be said to be the coherent arrangement of meaning that directs the advancement of a study; it is based on the classification of important concepts and the association among the concepts.

This study was guided by Cost Function derived from the Education Production Function Theory. Psacharopoulos and Woodhall (1985) put forward that Production Function Theory which considers production as the process that transforms inputs into outputs. Because of that, it follows that there is a relationship between inputs and outputs of education. A Production Function identifies the output of a firm and industry or an entire economy for all combination of inputs (Hanushek, 2007). In other words, Production Function in education or otherwise, describes the minimum level of outcome that can be possible from all possible alternative combinations of inputs. It gives a digest of technical relationships between and amongst inputs and outcomes. The Production Function put in the picture of what is possible at the present. It makes available a standard against which practice can be assessed on productivity basis (Monks, 1996). Three advantages of the cost function is advanced by Gronberg, Jansen, Taylor and Booker (2004) that, cost function allows a somewhat straightforward computation of alternative cost indices for policy analysis; the cost function provides a sound statistical approach to estimating the variation in required spending across administrative boundaries and that Cost Function uses actual data on factors affecting spending to develop estimates of the costs of performance standards. Even though schools are not profit-making firms, the framework with which it is operating in this case treated them as a production unit. Education is well
thought-out as a productive process where the various human and physical resources (inputs) are mixed (processed) together in a variety of ways. The effect of these processing actions comes out, educational outcomes (outputs) (Hywel, 1987). Psacharopoulos and Woodhall (1985) consider schools as production units which receive inputs and process them into outputs. The inputs of this education process include human and financial resources, physical resources together with students. In this case therefore, learners are considered to be part of the inputs of the process. This process is taken to be value addition of the education process. The output of this education system is the graduate with certain acquired characteristics (value added). In other words what comes out of this process is a qualified individual (graduate) with the required knowledge, skills and attitudes. Studies on Production Function have been used broadly to identify factors that produce good learning outcomes.

Hanushek (2007) advocates using economic analysis in order to improve student performance. World Bank (1980) gives a clear distinction between outputs in the sense of achievement of students which refers to knowledge, skills and attitudes as can be measured by tests and examination. Therefore, the quality of output of the education process can be measured through Kenya Certificate of Secondary Education (KCSE), examination which is taken at the end of secondary schooling; the scores is a test of attainment (MoEST, 2002). It, therefore, follows that, through the Production Function framework, the inputs into secondary education sub-sector, can be associated to student achievement or performance. This framework, specifies a level of achievement, usually
measured by students test scores as the representative output and characteristics of the teaching and learning environment as representative input (Taylor, 2013).

Secondary school education increases individuals’ well being first and foremost, through the acquisition of skills both cognitive and non cognitive. Because of this, an understanding of the process by which secondary school education produces those skills, was crucial for crafting effective policies on cost of education and in attempting to explore strategies for managing unit cost to enhance academic performance of learners in secondary schools. The largest part of this framework provides fundamental guidance on how educational cost impact on access, relevance and quality of education and more so in examining the influence of unit cost on academic performance of learners in secondary school system. Pritchett and Filmer (1999) lends support to Education Production Function and further elaborate that the educational output is a function of educational inputs (books, teachers, desk and laboratories among others); inputs creates very strong predictions about the results of estimating Education Functions according to a technically determined Production Function.

It is important to note at this point that, the inputs of education process which can be traced to the output (graduate) of the education process have cost implication. In order to achieve the output (graduate), there are costs that are involved; the cost of inputs. Koutsoyiannis (1989) states that the Cost Function is derived from the Production Function Theory. The total cost for a school process includes costs such as, expenses on non-teaching staff salaries, teachers’ salaries, maintenance expenses and costs of teaching.
and learning materials. The total cost is affected by many factors such as the cost of technology and the prices of the factors of production. But the cost of producing per unit of output (unit cost/cost per student), which is the average cost of production, will vary depending on the amount of output (number of graduates). The average cost (unit cost) reduces as the firm increases output (graduate) due to increasing economies of scale, reaches a minimum at the optimum point (optimal enrolment) and then starts rising as the firm faces diseconomies of scale. Given the growing enrolment in our secondary school sub-sector, other factors remaining the same, the expectation is that cost per student (unit cost) should be decreasing with learner outcomes improving. This study has been designed to establish unit cost, examine the influence of unit cost on academic performance of learners and to explore strategies for effective management of unit cost to enhance academic performance of learners in secondary schools in Kenya.

1.14 Conceptual Framework

Although Miles and Huberman (as cited in Kombo & Tromp, 2006) noted that a Conceptual Framework is a construction of knowledge based on the experience of the individual researcher developing it and thus it should not be given a power that it does not have. This researcher found it useful to develop a conceptual framework because it helps to link the Independent Variable (IV) and the Dependent Variable (DV) in a logical manner. According to Shields and Rangarajan (2013) and Oso and Onen (2009) Conceptual Framework is an image or written invention that is presented either graphically or in narrative structure which contains major items to be studied such as constructs, concepts or variables and the alleged relationships among them so as to organize ideas in order to achieve a research purpose and effectively make justification of
the study at hand. Kombo and Tromp (2006) agree to that and note that a Conceptual Framework enables a researcher to organize his/her thinking and thus fruitfully complete his/her investigations.

Furthermore, a conceptual framework keeps the study on course by conceptualizing the problem and giving a means to connect ideas and data collected. Genesereth and Nilsson (as cited in Kombo & Tromp, 2006) notes that, every knowledge base, knowledge based system or knowledge-level agent is committed to some conceptualization, explicitly or implicitly.

This study was carried out to analyze the influence of unit cost on learners’ academic performance in secondary school in Nandi County, Kenya. Figure 1.1 below presents researcher’s conceptualization of the interaction of the variables in the study. The conceptual model encompasses the major variable and their patterns of influence on each other.
Figure 1.1 Conceptual framework showing the relationship between unit cost and academic performance

(Source: Researcher, 2016)

From figure 1.1 above, a school is considered as a production unit that process students into desired graduates. This process requires inputs. This input involves monetary
expenditures. Such monetary expenditure can be attributed to individual learner (unit cost) It should, however, be noted that unlike firms, schools are not operating on profit maximizing but rather on cost-effectiveness. In this study, the Independent Variables (IV) is unit cost with its components; BOM teacher salary, non-teaching staff recurrent expenditure, expenditure on tuition, activity expenses, boarding expenditure, repair, maintenance & installation cost, expenditure on local transport and travelling, expenditure on electricity, water and conservancy, medical expenses, and other expenditure. On the other hand, the Dependent Variable (DV) is learners’ academic performance. The assumption is that the Independent Variables (IV) influences the Dependent Variable (DV). The relationship between the unit cost and academic performance is further influenced by the extraneous variables, such as, inflation levels, poverty index, costing policy, class size, efficiency and school environment.

1.15 Operational Definition of Terms

**Academic Performance:** This is the achievement in Kenya Certificate of Secondary Education (KCSE) by students. (School mean grade attained).

**Learners:** Refers to secondary school students.

**Type of Schools:** Refers to a school being Boarding secondary schools or Day secondary schools.

**Unit Cost of Education:** Refers to the cost incurred in providing education to an individual learner in a year.
CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter presents the literature reviewed for this study. The literature is reviewed in the subsections under the following titles: the expanding demand for education; costs, investment and financing of education; factors affecting academic performance in secondary education; the concept of unit costs in education and academic performance and measures to managing the increasing costs of education. The chapter ends with a summary of the literature reviewed.

2.2 The Expanding Demand for Education

The push for increased participation of children in school has been coming from all directions. The World Declaration on Education for All (EFA) in 1990 hard-pressed many African countries to enhance access to primary education. The increased enrollments in primary schooling level, continued to secondary education level. Ngware, Onsomu and Muthaka, (2007) observe that the major reason for investment in secondary education is an attempt to respond to the demand for secondary education that is increasing rapidly. Increasing demand for education is due to the fact that formal education is the main opportunity for social-economic improvement and societal mobilization (World Bank, 2009). Nyamongo, Sang, Nyaoga and Matoke (2014) considers education as a worldwide recognized basic human right hence it is a type of investment that has a say to development at an individual’s level and in the society at
large. It is commonly understood that the starting point for any development ought to begin with the growth of human resources. Effective growth of human resources is gauged by performance in the examinations. Performance in examinations has very useful contribution to human resource development of any nation (World Bank, 2009; and UNESCO, 2007). The main purpose of education is to prepare individuals for the job market through conveying of knowledge, skills, attitudes and cultural customs to the younger and growing generations. Furthermore, educational stakeholders know that quality education for all at all levels will enable individuals to utilize their natural resource endowment efficiently in order to accomplish and uphold desirable lifestyles for all Kenyans (Munavu, Ogutu, & Wasanga, 2008). To provide quality education we need to invest in education. Just like any other investment, educational investments have huge financial implications.

The study by Bedi (2004) focuses on demand for schooling and factors influencing enrollment in developing countries. Gertler and Glewwe (1989) used a rigorous theoretical model of demand for schooling to show how a household determines pay for secondary school education in Peru. In the Peruvian study, it was found out that households were willing to pay fees that are high enough to cover the operating costs of opening new secondary schools. This was true even for the lowest section of the income distribution, implying that households willingly supported expansion of secondary schools, and, therefore, improved access to secondary education in rural Peru.
UNESCO (2008) makes an observation that about ninety million children in the world were not accessing satisfactory education by year 2006. The 2007 UNESCO and UNICEF information dealt with three interconnected rights that need to be addressed so has to make available Education for All (EFA). These rights were identified to include the right to access quality education. The report observed that the hurdles to be eliminated in providing EFA include: cost sharing (funding by parents), shortage of teachers and lack of qualified teachers, insufficient physical facilities and ineffective supervision.

In Kenya, Abdi, (2010) in a study to examine the challenges inhibiting nomads communities in Wajir, Kenya from accessing formal education, found out that there is continuing under-participation of nomads in education. From the study factors cited for this under-participation include poor transport, location of schools, poor facilities, attitude of parents and poverty. It was recommended that in order to achieve improved participation, there is need to refurbish existing facilities, establish mobile schools, and strengthen legislation for compulsory education and at the same time improving the infrastructure for nomadic people.

Universal Primary Education (UPE) has been Kenya’s target since the attainment of its independence. In an attempt to achieve this goal, Kenya introduced Free Primary Education (FPE) in the year 2003. The consequences of Free Primary Education (FPE) were great increase in enrolments. On the other hand, in terms of quality, the education being offered is not satisfactory; the government has a tendency to put more emphasis on
the quantitative growth of education, giving little attention to value, significance and effects of education for individuals (Sawamura & Sifuna, 2008). It is imperative to give attention, not only, in the quantitative growth of education for the country, but also, to the qualitative growth of individuals for the community; emphasis of this kind enhances the benefits of schooling and gives sustainable confidence in educational development (Sawamura & Sifuna, 2008).

In Kenya, there has been progress in the trends in the secondary school Gross Enrolment Rate (GER) and Net Enrolment Rate (NER) from 2011 to 2015. Gross Enrolment Rate (GER) refers to the total enrolment in secondary education as a percentage of total population aged 14-17 years, while Net Enrolment Rate (NER) refers to the secondary school enrolment aged 14-17 years as a percentage of population aged 14-17 years at any position in time (Onsomu et al., 2007). According to the Economic Survey 2016, the GER increased from 58.7 per cent in 2014 to 62.9 per cent in 2015 while the NER slightly increased from 47.4 per cent in 2014 to 47.8 per cent in 2015; the small change in the NER is, to a certain extent, ascribed to fewer under, and over age students enrolled, the sustained implementation of Free Day Secondary Education (FDSE) in addition to development of infrastructure in various schools. Although information on the degree of access or transition from primary cycle to secondary has not been impressive in Kenya, it was established that the Pupil Completion Rate (PCR) increased from 78.5 per cent in 2014 to 82.7 per cent in 2015, while the Primary to Secondary transition rate rose from 80.4 per cent in 2014 to 82.3 per cent in 2015 (Republic of Kenya, 2016). Transition rate refers to the proportion of a cohort of learners completing the last grade of primary school cycle and moving ahead to the first year of secondary school education; it is
reliant on favourable assessment in final primary cycle examination which is a screening tool given the limited spaces in secondary schools (Onsomu et al., 2006). Enrolment growth in most low-income countries in Sub Sahara Africa has outpaced the increase in resources available for secondary education. Given the several competing demands on the already constrained public resources, most governments in Sub-Sahara Africa find it unachievable to mobilize sufficient funds to increase speed of the development of secondary education; while fees and other private cost result in the exclusion of poor students from attending school. This further worsens the level of access and participation in secondary education. In several Sub-Sahara Africa countries, with substantial commitments to universalizing primary education, more of recurrent expenditure is allocated to primary schooling in the midst of competing requirement from higher education and other levels of educational development.

Developing countries with low secondary enrolments, like most African countries, cannot finance substantially higher participation rates from domestic public resources with current cost structures (Lewin and Caillods, 2001). To respond to the increased demand for secondary places, while constrained by the public funding, countries have spread the same resources over larger number of students, attempted to mobilize private funding or most often did both. Exacerbated by inefficiencies in the deployment of resources, essential inputs often are in short supply resulting in shortages of textbooks, instructional materials and supplies, poorly stocked libraries and double or triple shift use of facilities. In addition, as government funding stagnates, parental contributions have become an essential complement to public funding
The improvement of primary to secondary transition rate can partly be attributed to implementation of Free Day Secondary Education (FDSE) and expansion of education facilities (Republic of Kenya, 2015). The number of learners who will be seeking for places in secondary education will even be more given the discussions of having 100% transition rate from primary to secondary. The implication of this is that huge financial resources will be required to provide quality, relevant and accessible secondary education to this increasing numbers. Improvement in transition rates from primary school to secondary school is a fundamental issue for the government of Kenya. In the development of education policy at the national level, Universal Primary Education, which was inclined to enrolling large number of children progressively ended and in its place, came the Education for All (EFA); swift quantitative growth in numbers in terms of enrolment, was given emphasis as opposed to gathering the pressing call for providing quality education (Sawamura & Sifuna, 2008).

Success of any education system is measured in many ways. One technique of considering the height of accomplishment in secondary education is the level of access. We strive to achieve universal access to education; which is the ability of all people to have equal opportunity in education, regardless of their social class, gender, ethnic background or physical and mental disabilities. However, the issue of access to secondary education is affected by a number of factors. Ngware, Onsomu, Muthaka, and Manda (2006) suitably put it that the most important determinants of access to secondary school education at the level of the household include the household's income, household residence, level of education of the household head, sex of child to be educated,
availability of schools and age of student. They suggested the strategy for expanding secondary school education to include: development of infrastructure in the schools through strong partnerships with all the stakeholders, effective utilization of both human and financial resources, mounting sustainable poverty reduction strategies and enhancing household consciousness on the significance of secondary school education, and above all, addressing gender disparities.

Another vital component of participating in secondary education is the ability of the fee paying parents to afford direct costs and the perception of parents of the opportunity costs. Ohba (2009) in a study to examine the effect of fees on transition to secondary schooling, observed that, although there is a high demand for secondary education in general, whether those who are clearing primary school level and coming from low-income families actually enroll in fee-free secondary education, will depend, to a greater extent, on other direct costs and opportunity costs of secondary education and the way they perceive economic returns from acquiring such education. Emanating from this study therefore, even if secondary school fees were abolished, there are other factors which may keep potential learners away from school.

In most African nations, secondary education is in a position of predicament. The source of public policy debate on education is brought about by issues of access to education, quality of education and curricular improvement. The current state of affairs is illustrated by education sector’s increasing demand from household and public sector resources alongside a background of extensive poor economic growth, increasing international debt, and speedily growing populations. The demand for education cannot be achieved
easily by the usual means of financing of education. Educational policy makers and other stakeholders are tackling increasing difficulties in allocating the scarce resources to achieve present and future levels of demand for education by the society (Ngware et al., 2007).

According to the Economic Survey (2016), the total number of teachers in public secondary schools and tertiary institution increased by 8.5 per cent from a total of 78,727 in 2014 to a total of 85,438 in the year 2015. In public secondary schools, the Pupil Teacher Ratio was 27:1 in the same period. The Pupil Teacher Ratio (PTR) is an investigative gauge of the consumption levels of teachers in schools. This has inferences of assurance on the cost effectiveness in the provision of secondary education, given that a lower PTR implies under utilization of the teacher human resource. The low PTR can be attributed to the curriculum establishments and total number of periods per week of learning time. Most teachers in secondary education teach relatively fewer numbers of hours per week in comparison to the national standard of 27 periods (18 hours) per week (Onsomu et al., 2006). The need for proper utilization of teachers as an important resource input is because of the overall cost implication. Given that education expenditure was expected to account for 14.4 per cent of the national budget in 2015/2016 fiscal year, additional resources would be difficult to raise (Republic of Kenya, 2016). Although there is yearly increase in the number of teachers in secondary schools, teacher shortage is still reported in most schools. Yet in several other schools BOM have resorted to employing teachers in an attempt to cover the shortage, thus causing further financial burden to the parents. The shortage of teachers in an
environment of low PTR is due to many classes which are not optimally enrolled. Expanding demand for secondary education means there is need to hire more teachers and provide additional teaching and learning resources. The consequences of these are additional cost.

In Kenya the government adopted a strategy of expansion of existing secondary schools where the single stream schools were mandated to increase their capacities to at least a minimum of three streams. This was seen as a cost-effective way of increasing enrolment (Omukoba, Simatwa & Ayodo, 2011). Expanding demand for secondary education has implication of increasing total cost of secondary education. The increase in terms of enrolment and cost of education is of enormous interest to both the government and households who demand for secondary education. Generally, the total number of educational institutions in Kenya increased by 3.2% from 77,197 in 2013 to 79,641 in 2014 and to 82,889 in 2015 (Republic of Kenya, 2016). The consequence of this increase is the corresponding increase in demand for more and more resources. On the supply side of education, in order to accommodate the increasing demand for secondary places, there has been an increase in, not only, the number of public secondary schools, but also, the number of private secondary schools in Kenya. Appendix 4 shows graphically the trends of growth of secondary schools in Kenya. These trends have been tabulated in Table 2.1 below.
Table 2.1 Total Number of Secondary Schools in Kenya (2010-2015)

<table>
<thead>
<tr>
<th>Description</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Public Secondary schools</td>
<td>5,296</td>
<td>5,311</td>
<td>6,188</td>
<td>6,807</td>
<td>7,680</td>
<td>8,297</td>
</tr>
<tr>
<td>Number of Private secondary schools</td>
<td>905</td>
<td>946</td>
<td>986</td>
<td>1,027</td>
<td>1,067</td>
<td>1,143</td>
</tr>
<tr>
<td>Total number of Secondary Schools</td>
<td>6,201</td>
<td>6,257</td>
<td>7,174</td>
<td>7,834</td>
<td>8,747</td>
<td>9,440</td>
</tr>
</tbody>
</table>


From Table 2.1 above, number of public secondary schools increased from 5,296 schools in 2010 to 5,311 school in 2011. The numbers of public schools rose to 6,188 schools to 6,807 schools then to 7,680 schools in the years 2012, 2013 and 2014 respectively. In 2015, number of public secondary schools stood at 8,297 an increase of 56.6% compared to number of public secondary schools in 2010. At the same time, number of private secondary schools increased from 905 schools in 2010 to 1,143 schools in 2015 an increase of 26.3%. In total, the number of secondary schools in Kenya increased by 52.2% rising from a total of 6,201 schools in 2010 to a total of 9,440 schools in 2015. Increase in the number of private secondary schools in Kenya is the evidence of private citizens’ participation in supplying education in Kenya; this is a further demonstration to the need for more and more places for secondary school going age children. However there is still demand for more education places for secondary school going children.

In Kenya, demand for education has been increasing even with hard economic situations. This can be seen where parents have shown a lot of resilience in their quest to finance
education of their children through payments of fees. Others have enrolled their children
in private secondary schools in search for quality education for their young ones. Such
parents have appreciated performance of these private secondary schools. Historically,
enrolment trends in secondary schools show a steady growth from 30,000 in 1963 to
860,000 students in 2003, and to over 1 million in 2006 (Munavu et al., 2008). Table 2.2
below shows the national trends in secondary school enrolment by class in the years
between 2010 and 2015.

**Table 2.2 National Trends in Secondary School Enrolment by Class (2010-2015)**

<table>
<thead>
<tr>
<th>Class</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form 1</td>
<td>498,933</td>
<td>521,601</td>
<td>532,128</td>
<td>617,528</td>
<td>673,419</td>
<td>732,664</td>
</tr>
<tr>
<td>Form 2</td>
<td>443,944</td>
<td>460,021</td>
<td>513,938</td>
<td>541,977</td>
<td>633,645</td>
<td>691,411</td>
</tr>
<tr>
<td>Form 3</td>
<td>398,609</td>
<td>413,045</td>
<td>457,427</td>
<td>496,090</td>
<td>557,934</td>
<td>627,513</td>
</tr>
<tr>
<td>Form 4</td>
<td>311,898</td>
<td>373,053</td>
<td>411,330</td>
<td>488,667</td>
<td>466,699</td>
<td>507,393</td>
</tr>
<tr>
<td>Total</td>
<td>1,653,384</td>
<td>1,767,720</td>
<td>1,914,823</td>
<td>2,144,262</td>
<td>2,331,697</td>
<td>2,558,981</td>
</tr>
</tbody>
</table>


From the Table 2.2, it can be revealed that, across the classes and for all the years,
enrolment in form one is higher compared to other forms. This illustrates that there was
increasing demand for secondary school places every year. Total secondary school
enrolment stood at 1.6 million in the year 2010. Student enrolment in secondary schools
progressively increased to 2.6 million in the year 2016 representing 54.7% increase. This
was an additional enrolment of about one million students for the five year period.

According to economic Survey 2015, total enrolment in pre-primary schools grew by
5.4% to 3.0 million while total enrolment in primary schools rose by 1% from 9.9 million in 2013 to 10.0 million in 2014, with over 80% of students being enrolled in public schools. Pre-primary and primary school increase in enrolment, would in the long run, translate to a higher demand for secondary school places. Thus these expansionary trends in student and pupils’ numbers shows that demands for education and more so demand for secondary education will continue to increase. The consequences of this are the need for more financial resources.

In Kenya, the major concerns for the government are issues of access, retention, equity, quality, relevance, and internal and external efficiencies within the education system (Achoka, Odebero, Maiyo & Mualuko, 2007). Through the introduction of Free Primary Education (FPE) in 2003 and Free Secondary Education in 2008, the government of Kenya has shown her obligation to the provision of quality education and training as a human right for all Kenyans. The rapid increase in enrolment in public secondary schools in Kenya may be attributed to the Free Primary Education (FPE) and the Free Day Secondary Education (FDSE). Increasing concern has been on the implication of increased enrolment on the learners’ academic performance in national examinations. There is apprehension that the available classrooms and teachers may not accommodate the larger number of learners in public schools. The overall implication of these expanding demands for education is the increased demand for more resources, pushing the cost of education even higher. Given that different sectors of the economy are competing for public resources, it follows that the much needed additional funds for education sector shall be difficult to receive. It is, therefore, of great interest to education
stakeholders to identify means of achieving the best performance given the obviously expected limitation of educational resource inputs.

Further afield, secondary school expansion in Zimbabwe could be linked to high level of policy and financial commitment and prioritized expenditures sustained for a long period (Lewin and Caillods, 2001). For the duration of the expansion period, budgetary allocation to education was maintained at 8 to 9 percent of Gross National Product. In the same period secondary education allocation increased with tertiary allocation held to less than 10 percent. At the same time, unit cost of primary and secondary education remained stable and in small multiples of unit cost recorded at 1:2, respectively. This contributed to financial sustainability of enrolment growth at secondary school cycle. The country adopted a system of sharing the costs of increased participation among all stakeholders including local authorities, communities and community-based organisations, hence easing the cost burden on the government.

Furthermore, Lewin and Caillods (2001) brings out the case of Malawi as one of low participation rates at primary (65 percent) and secondary (6 percent) levels in 1995 and nominal transition rate from primary to secondary of 10 percent. The low secondary enrolment rates were associated with low levels of participation at primary and low performance at final grade of primary level leading to minimal number of the pupils meeting the minimum requirement for transition to secondary. Repetition and dropout rates were estimated at 15-20 percent and 18 percent in primary education, respectively, during the same period. The implementation of FPE in 1994 placed severe budgetary
constraints on financing of secondary education estimated at seven or more times higher than that of primary education (1:7). Towards expanding secondary education in Malawi, the major policy and investment commitments included increasing transition rates from primary to secondary to 30 percent by building more secondary schools.

The case of other countries further brings out a different picture. For instance, Sri-Lanka’s education is characteristic of low costs and its education organizational structure allows for integrated primary and secondary schools, and sustainability of secondary enrolment at affordable rates (6 percent of GNP). Sri-Lanka, though a low-income country, had high school participation rates estimated at 104 percent primary GER, 66 percent secondary GER, and 4 percent tertiary GER in mid-1980s and low population growth rate of 1.2 percent between 1980-1994. By 1993, the participation rates for 5-14 age population had reached 93 percent rural and 96 percent urban. This, as Lewin and Caillods (as cited in Onsomu, 2006) is attributed to rapid secondary school expansion and sustainable financing, including decentralization of management to principal councils. Free Primary Education with grade 1-13 supported with widely distributed school facilities, free text book scheme, high subsidiary secondary education, free uniforms; adequate provision of infrastructure for teacher training and in-service programmes, and high internal efficiency reflected by low repetition (2.6 percent) rates and dropout rates (4 percent).

Countries like the Czech Republic have made financing of secondary education more affordable by increasing the teacher load, increasing the teacher intensity in terms of the
pupil-teacher ratio and merging of schools with low enrolment. Other cost reduction measures include individual teacher innovations, such as, the use of computers in teaching (OECD, 1999). Sweden, on the other hand, has transformed the steering system for the school from a highly developed resource steering system based on regulations to a decentralized system based on goals and result oriented steering. Various countries that are on track in achieving UPE are now looking for innovative strategies and financing options for expanding secondary education, consistent with national human capital development goals. However, fiscal constraints prevent many, especially low income countries, from relying solely on government revenue to finance desired educational expansion. To solve these problems, most countries have adopted policies to: (a) charge tuition fees to recoup part of the cost of providing public education services; and/or (b) encourage development of private schools to handle at least part of the expansion. Demand side financing mechanisms, such as vouchers, stipends, and capitation grants are also frequently employed especially in OECD countries.

Kenya and Tanzania are Sub-Saharan African countries that have succeeded in the implementation of Free Primary Education which is viewed as the first step towards achieving Education for All (EFA) and some of the Millennium Development Goals (MDGs). In both countries, the achievements of Free Primary Education (FPE) policy is leading to improved access to the secondary education. Growth in primary school enrollment, therefore, has financial implication to secondary education if transition rate improves (Orodho, 2014). The desire for expanded participation in education was one of the pillars for the fight towards independence, and indeed, perpetuated colonial rule that had existed in East Africa before independence in the 1960s (Oketch & Ngware, 2012).
Even as East African countries were preparing for independence, ensuring that the learners were educated and the need for critical mass of leaders who would bear the burden of leadership was in the mind of colonial administration and education was the conduit to do this. The challenges of education were enormous and so were those of development, but education was put at the middle of modernization and seen as the catalyst of this process (Orodho, 2014).

Orodho (2014) notes that Kenya and Tanzania have been successful in increasing enrolments even though they currently face two major problems, enrolling the remaining 10 to 20 per cent of the relevant school age population at the primary level who tend to be the poorest children, and making sure that those in school profit from quality learning. It is also debatable that, even in situation where fees are not factors in preventing access to, and retention in education, they may still have a significant impact. Differences in household income may play an important role in determining who participate in schooling. It is hard for the poor to pay fees and thus retention for this group may be low. The experience of Kenya and Tanzania shows that the removal of fees at the primary level, can have spectacular results. Inescapably, increased enrolment has brought up concerns for weakening quality and increased demand for secondary education; with huge financial implication. On the negative side, low enrolment may reflect a lack of supply of schooling, the opportunity costs of attending school, the perceived low returns from schooling in the labour market or other factors, such as, the distance to school for girls and the existence of female teachers and separate toilets. Thus, the findings reported in this paper support the earlier conclusion by Raja and Burnett (2004) that determinants
of enrolment, include household income, schooling cost, and presence of schools, community involvement, transportation, education quality and relevance.

It is also evident that price elasticities of demand for education are often higher for the poor and for girls in Kenya and Tanzania. There is ample evidence and good intuitive reasoning for the idea that enrolments will be lower for the poor and for girls as the household cost of education rises and as a result, reductions in the costs of schooling for these groups will promote equity. However, it is also cautioned that the direct impact of fees on learning and educational quality is more difficult to discern. It is apparent that demand for education is sensitive to quality as well as price so it may be that in some circumstances at least, a trade-off between price and quality exists among some communities in Kenya and Tanzania (Orodho, 2014). It is likely that the poor will find it difficult to access secondary education even after completing primary education. This will limit the impact of education on poverty reduction and in meeting the MDGs. It is evident that there is need to clearly understand the shift in the factors that might encourage or hinder strong community involvement in the development of basic education and whether the policies outlined by the Government are likely to have any impact.

Orodho (2014) concluded that the remarkable quantitative growth has occurred in access to primary and secondary education in the Kenya and Tanzania. Nevertheless, these countries have experienced unique diverse and entangled challenges of providing education, resulting in noticeable and severe regional and gender disparities in access to, and quality of education. The overall quality of education in the two countries has also
been questionable. The two countries have put in place a chain of educational interventions and drivers including Free Primary Education and subsidized secondary education, as well as, bursaries for the poor needy learners that are yielding slow but positive progress towards the attainment of EFA goals. It is concluded that these efforts should be accelerated and intensified with a view to reversing regional and gender disparities keeping in mind the fact that the deadline for the attainment of EFA goals is fast approaching, and therefore, making it urgent to effectively translate the education policies into practice rather than the current rhetoric chimera.

Given the declining trends in secondary Gross Enrollment Rate as witnessed in the 1980’s and 1990’s, the government of Kenya was disturbed that further turn down would undermine efforts towards EFA targets (GOK, 2005). The Sessional Paper No. 1 of 2005 outlined strategies of enhancing access hence enrolment. One such strategy was to increase provision of bursaries and devise better methods of targeting and disbursing funds to the needy (GOK, 2005). Another strategy was to work in partnership with parents, communities, private sector among other stakeholders, in providing secondary education. The implementation of Free Secondary Education saw many parents withdraw from paying additional levies to complement the FSE due to misconception. This compromised internal efficiency in quality of education and encouraged dropouts. In laying strategies to enhance access and equity, the government of Kenya was banking on community partnership which greatly led to establishment of harambee secondary schools in the 1970’s, but whether that will work today given the different labour market circumstances is not clear (Oketch & Rolleston, 2007). Indeed, the government expenditure on education is comparatively high compared to other ministries and banking
on donor support without sustainable economic growth may undermine the viability of the programme. The Parliamentary House Committee on Education in a Special Report pointed out that the Free Secondary School Programme, had faced many challenges including lack of schools to match the growth in enrolment arising from the huge number of graduates from primary schools, shortage of teaching materials and large number of school dropouts (Siringi, 2012). The upsurge in enrolment has resulted to underfunding.

Mualuko and Lucy (2013) notes that the rise in enrolment following the Free Education initiatives is an indication of the urge for the young generation to get educated and the willingness of the older generation to invest in education. The government should enhance transparency and accountability in government departments to win back donor confidence in financing education. The budget for education in Kenya is comparatively large, yet seems to be inadequate, requiring consolidated support for sustainability. The gains made in enrolment due to government supplementation of education costs need to be applauded. However, further efforts should be made to ensure that those who enroll do not drop out by cushioning parents from the low income bracket. There is need to address the issue of infrastructure as the rising numbers seem to out match existing facilities. Overcrowding, if not well managed, could greatly compromise quality.

Lewin (2008) aptly puts that investment in secondary schooling in Sub-Saharan Africa, has been neglected since the World Conference on Education for All at Jomtien. The World Education Forum in Dakar started to recognize the growing significance of post-primary schooling for development. Only 25 percent of school-age children attend
secondary school in the region and fewer complete successfully, having consequences for
gender equity, poverty reduction, and economic growth and development. As universal
primary schooling becomes a reality, demand for secondary schools is increasing rapidly.
Gaps between the educational levels of the labor force in Sub-Saharan Africa and other
regions remain large. Girls are more often excluded from secondary schools than boys,
secondary schooling costs are high for both governments and households; radical reforms
are needed in low-enrollment countries to make secondary schooling more affordable and
to provide more access to the majority currently excluded groups Lewin (2008).

2.3 Cost, Investment and Financing of Education in Kenya

According to Organization of Economic Cooperation and Development (OECD) (1999),
education expenditure refers to the financial disbursements to educational institutions to
be used to acquire various teaching and learning resources or inputs of the schooling
process; such as administrators, teachers, materials, equipment, and facilities. A lot of
importance is attached to the general measures of education spending, expenditure per
student (unit cost), educational expenditure as a percentage of Gross Domestic Product
(GDP) and educational expenditure as a percentage of total public expenditure in the
Kenyan schooling system. Although each of the ratios serve as an indicator of a country’s
cost and financial commitment to education, each takes into account different aspects or
determinants of educational spending, such as the number of students enrolled and the
national wealth. According to Brissed and Cailloids (2004), in the OECD countries, the
fundamental principles that direct the policy of financing secondary education are
interrelated to; the necessity to make possible access to basic and compulsory education, equality of opportunity and freedom of making education choice.

Financing secondary education is essential because it entails an investment in education that produces substantial social and private returns. Social returns are the benefits that accrue to the society as a whole because of providing education to the individuals while private returns are the benefits that an individual gets by receiving some form of education. Specifically, in Africa, there are a number of important justifications for investing in secondary education: secondary education is critical for economic growth and development, technological advancement in the current world has made knowledge indispensable, secondary education is necessary for human capital development, it is a link between primary education and further learning, secondary education contributes to the socialization process of young people, secondary education provides private returns (Ngware et al., 2007).

Society, individual’s socio-economic and political reasons influence the choice to spend huge resources on secondary education in Kenya. Some of the social and political goals of secondary education include the need to reduce inequalities of access, improve education levels, improve awareness of national issues, reduce population growth rates and attempt to preserve existing social orders (Ngware et al., 2006). On issues of economic development, the leading school of thought on the function of education, secondary school education included, is that education is an investment in human capital (Di Gropello, 2006). At the macro-economic level the link between ratios of enrollment
and the level of Gross National Product (GNP) per person and the connection between per student educational expenditures (unit cost) and per capita income are the regular ways of evaluating the contribution of education to economic development; while the verification of the economic productivity of education at the microeconomic level, can be achieved by evaluating the rates of return to investment in education (Bray, 1998). In Kenya, the private rate of return to secondary education stands at (17.2%) is comparatively high compared to that of primary education (7.9%), despite the fact that it is lower than that of university education which stands at (32.5%) (Ngware et al., 2007). This can be said to justify the usage of enormous financial and other resources in secondary and university education.

Kenya and most of the African countries are faced with a number of policy options for dealing with the resource requirements for secondary education and in all other levels of education. Some of these options include; retaining and maintaining the existing financing state of affairs, considering whether to raise resources allocated to secondary education taking into account the expansion of existing schools and programs or considering structural reform in secondary education (UNESCO, 2006). In Kenya, continuously apportioning the same levels of education resources has led to increased technical inefficiency which manifest in form of low enrollments, high drop outs and reduced quality of secondary education. On the other hand, structural reform in secondary education aim at improving the economic efficiency thus enabling the system to act in response to the growing school age population which is in a comparatively limited education financial support. By and large, areas which are always earmarked for
efficiency enhancement comprise of reforms in the curricular, improvements in the quality of educational inputs, effective teacher utilization, decentralization of management and moving of some of the financing load away from the public sector to the private sector by encouraging private sector investment in secondary education (Di Gropello, 2006). However, given the options, economic alternatives have to be considered based on the existing policy environment. An option, such as, maintaining the existing financing situation, may lead to grave decline in the quality of secondary education and in that way compromise sustainable economic growth.

Provision of quality secondary education is important in generating the opportunities and benefits of social and economic development as envisaged in vision 2030. Secondary education in Kenya links basic education to tertiary education. World Bank, 2005 (as cited in Gongera & Okoth, 2013) emphasizes that secondary education is a transition level of education that links basic education with skills and professional development and thus plays a significant role without which one cannot achieve them. The educational requirements for secondary education have increased due to the introduction of Free Primary Education in 2003 and the increased transition rate. Given the major challenges that need to be attend to in the cost and financing of secondary education, the government and other stakeholders in education sector need to find viable strategies in pursuit of quality education for all who require this level of education. Due to increasing demand for secondary education places, expenditure on education is likely to increase even more. This, therefore, raises uncertainty on the sustainability of government funding. There is need to explore ways of making secondary education system efficient and effective in the
face of financial constraints. One of the objectives of this study was to explore strategies for managing unit cost in order to enhance performance of learners in secondary schools in Kenya.

In the quest to provide Free Secondary Education the government of Kenya assumed there was adequate physical capacity to accommodate more students in schools; that the government’s current budget for secondary education was sustainable; and that the Free Primary Education programme was successful. Hence, the Ministry of Education looked at why low transition rates to secondary school continued by addressing five thematic areas: i) the unit cost of secondary education; ii) the structure of tuition fees; iii) non-teaching staffing norms and wage guidelines; iv) essential versus luxurious needs in secondary education; and v) tuition fee waivers and their implementation challenges. As a result of this study the government concluded that Free Secondary Education was viable (KIPPRA, 2007). In Kenya, several recent government documents refer to the government’s high commitment to meeting the EFA and MDGs targets (MoEST, 2005). The Ministry of Education Science and Technology underscores that costs of secondary education are the main reason for the low transition rate to secondary education. The report proposes that the government should address transition rates. In response, the Government developed the Kenya Education Sector Support Programme 2005-2010, which clearly states their intention to integrate secondary education as part of basic education (MoEST, 2005). This policy framework became the backbone for implementing Free Secondary Education.
Government of Kenya has dedicated most of its programmes to the expansion of the education sector. This may be because it is persuaded by the function of education in advancement and accelerating social and economic development. However, the growing demand for education has financial implications which the government could not shoulder it alone thus introduced the Cost Sharing Policy in 1988. Demand for education has significantly increased in Kenya, yet the sources of education finances are getting limited even with the cost sharing strategy in place. With increasing poverty levels, most parents and education sponsors are finding it difficult to meet the cost requirements under the policy of cost sharing.

Wambugu and Mokoena (2013), in their study to determine the direct costs used by parents as a component of the cost-sharing policy to finance secondary school education in Kenya, noticed that with the introduction of the cost-sharing policy in Kenya, there has been an increase in school fees at secondary school level. This finding were echoed by Wanjiru (2012), who established that there was an increase of school fees at secondary school level as a result of the introduction of cost sharing policy. The consequence of this has seen children from poor family backgrounds continue to be marginalized because some national schools charge very high school fees. Given that children from less endowed family backgrounds are not able to register in such expensive schools, their choice are thwarted away and having no other option, they end up at District secondary schools against their will. Wambugu and Mokoena (2013), while investigating the views of parents about the impact of the cost-sharing policy, found out that most of the parents view cost sharing as a burden, mainly because not all of them are able to educate their
children beyond the primary school level. Because of this, it follows that, the ongoing discussion of having Free Secondary Education must be a welcomed more. However, the question arises, will the Kenya government sustainably provide this free education and again, how will this affect performance. Demand-side financing mechanisms are used to help poor families invest in schooling. This is accomplished by reducing official tuition charges. School choice is promoted as a means of increasing competition in the school system. Competition leads to efficiency gains as schools, both public and private, compete for students and try to improve their quality while reducing expenses. By encouraging more private schools, vouchers allow school managers to become innovative and thereby bring improvement to the learning process.

Education financing in Kenya comes from various sources, government institutions are financed by the government from the finances voted by the National Assembly every budget year. At the secondary school level, individual secondary schools Board of Management (BOM) prepare their yearly budgets or estimates, which are then forwarded to the Ministry of Education for approval. These estimates show the amount of fees to be collected from parents and how the money will be spent in the year of the budget. According to Otieno and Colclough (as cited in Gongera & Okoth, 2013), Kenya Government funding of education sector reveal that the sector, has over the years, taken the largest proportion of the government budget, which has often led to calls for its reduction. Recurrent expenditure by the MoEST grew by 25.5% in 2014/15 fiscal year to 297.6 billion from 237.2 billion in 2013/14 fiscal year. National government total development expenditure on social services, including education more than doubled in
the same period (Republic of Kenya, 2015). Again it is worth noting that percentage expenditure in secondary education sub sector compared to the in total expenditure for the education sector increased from 1.7 % of total expenditure for the Ministry of Education in 2010/2011 to 10.3% of the total expenditure for the Ministry of education in 2015/2016. (This trend is also presented graphically in appendix 6). Indeed the trends clearly indicate that there has been increasing expenditure to the education sector in general and to the secondary sub sector, in particular. However, despite the high expenditure, the country cannot disregard the provision of quality education for her people; this is because education policies confer both the right to universal access to education and the need to rapidly boost the development of skilled human capital (MoEST, 2005).

The Government of Kenya spends a relatively high proportion of total public expenditure on education as a percentage of Gross National Product (GNP). In 2006, total public expenditure on education was 6.9 percent of GNP (UNESCO, 2008). Despite the relatively high expenditure on education, the GER in secondary education was only 31 percent in 2006 (UNESCO, 2008). Lewin (2007) suggests that in general to achieve GERs of 110 percent in primary, 100 percent in lower secondary and 50 percent in upper secondary, approximately 8.6 percent of GNP would be required to be spent on education without any cost saving reforms; or 6.3 percent of GNP with cost saving reforms. Lewin further suggests that no country with ratios of secondary to primary unit costs of more than 3:1 succeeds in universalizing secondary education. This is a critical challenge in Kenya, given the fact that the ratios of secondary to primary unit costs were roughly 3.4:1
in 2004/2005. This suggests that if Kenya were to achieve universal secondary education, the overall public expenditure on education would have to be increased to 8.4 percent of GNP. Of that, at least three percent of GNP would be required for secondary education with cost saving reforms of no more than 3:1 in the ratios of secondary to primary unit costs. Unless the government radically changes the cost structure, it is unlikely that Kenya will be able to achieve sustainable universal secondary education.

Mobegi, Ondigi, and Oburu (2010) observe that, introduction of the Free Secondary Education, enabled schools to receive some funding from the government. Yet again due to the limited financial support by the governments, households are shouldering a large share of the cost of secondary education. In Kenya, Uganda, and Tanzania more than half the total cost per student (unit cost) is financed through fees and other contributions (Lewin, 2006). Consequently, parents are required to pay for a variety of other costs, such as, school development projects and boarding fees for the boarders. The matter of finance is critical to retention of learners and in the provision of quality education because finances determine the availability, quality of physical facilities, teaching and learning resources, teacher motivation and teacher employment at the time of shortage. The enormous resources going into our education sector at a time where several other sectors are competing for funding means that strategies must be put in place to ensure that learning outcomes matche the zeal at which we have as a country in committing finances to education sector.
Education costs such as expenditure on textbooks, food, examination, personal emoluments, instructional materials, school uniforms, transportation and expenditure for sports have been the foremost limitations to realizing the Universal Basic Education, in particular, to the poor (Karemesi, 2010). According to Psacharopoulos and Woodhall, (as cited in Ngetich et al., 2014), education is both a private and a social investment that is shared by individual students, their families, governments, employers and other groups. The sharing arrangements vary considerably from country to country, both in the proportions of public and private funds allocated to education and in the mechanisms by which the costs of education are financed. It is interesting to note that what is obtained in Kenya today is what was during the 1960s to 1970s, where most of the expansion in education, was financed by increased public expenditure on education, which rose in relation to national incomes and public expenditure as a whole (Eshiwani, 1993).

A point of view on potential impact of education investment on economic growth and development are mainly based on the social and economic returns on human capital development. Bray (2002), notes that the levels of education financing, both by public and private sector, to a large degree, are influenced by the political, social, and economic factors. Lewin and Caillods (as cited in Onsomu, 2007) notes that education is related to improved macroeconomic performance in the form of higher levels of growth rates through the associated levels of productivity and per capita income at the country level. It may be argued that there may be a vicious cycle of greater investments in education, leading to higher economic growth, which in turn provides financial support for even greater investments in education as it happened in East Asia (Bray, 2002). The question
of resource allocation, therefore, becomes a delicate balancing affair. Other sectors of the economy require investment so that we may achieve economic growth and thereby get enough resources to allocate to education. On the other hand, we need to develop manpower needed by the growing economy hence the need to allocate more resources to education now and not later on.

According to Lewin (2006), the two largest cost components in most secondary school systems in sub-Saharan Africa are cost of boarding and cost of teachers’ salaries. Costs can be classified into teachers’ salaries, non-teaching staff salaries and non-salary operating costs. Non teaching salary costs refer to the cost of remunerating the non-teaching staff which include salaries of accounts clerks, clerical officers, dormitory workers, maintenance/ cleaning staff and security. As boarding cost reduces with an increase in the proportion of Day schools, non-teaching salary budgets should fall substantially. Non-salary costs are costs associated with building repairs, utility bills, equipment and learning material and sometimes with transport, food and accommodation; they can be substantial and comparable to salary costs in residential boarding schools (Lewin, 2006). It is desirable that these costs are managed efficiently in ways consistent with the desire to achieve the highest performance possible.

Chisumi (2012) observes that investment in education increases speed of economic growth and economic development of a nation. He further noted that increased cost of education alongside other competing needs of other sectors have lead most developing countries to take on cost sharing method as a useful ingredient of financing of secondary
education. In Kenya, to guarantee increase access and supply of education, the government has issued fee guidelines to be followed by secondary schools. However there have emerged different views among education managers and other stakeholders on the tangible cost of education for secondary schools. The points of views ranges from the argument as to whether, the amount stated by the government is adequate, to whether all schools should be charging the same amount every year.

According to the MoEST (2015), some of the key recommendations of Kilemi Mwiria’s report on secondary school fees in Kenya included; downsizing of bloated non-teaching staff, removal of the responsibility of developing infrastructure from parents to CDF and County governments, merging of non-viable and uneconomical schools, redistribution of teachers, employment of adequate teaching staff and subsidizing the cost of electricity and water. The taskforce further made recommendations on reasonable unit cost of secondary education and provided that fees for Day schools be Ksh.23,973, Boarding Schools Ksh. 51,839 and special needs secondary schools Ksh. 55,435. These measures were expected to be implemented to mitigate financial burden on the part of the parents as well as, improving participation in secondary school education. Increase participation at the secondary school level is also expected due to increased enrolment at the primary level of education.

Kenya government is attempting to advance Free Secondary Education. Nonetheless this ambition is unachievable without additional external assistance and again its sustainability is open to discussion (Sawamura & Sifuna, 2008). As an effort to sustain
Free Secondary Education, or to reduce financial burden for fee paying parents, the government discontinued certain unnecessary vote heads such as education improvement, teacher motivation, and County education levies. The government also gave a capitation of Ksh. 12,870 per student for regular schools and Ksh. 32,600 per student for special needs schools, the maximum payable fees by parents was Ksh. 9,374 for Day schools, Ksh. 53,553 for Boarding schools and Ksh. 37,210 for special needs schools. Furthermore, the government was expected to meet the full cost of examination for KCSE candidates in public secondary schools. To distribute the burden all the way through the year, schools spread these fees into the three school terms at the ratio of 50:30:20. The government commended schools that had charged fees below these ceilings and advised them to continue with that trend (Republic of Kenya, 2015). However, even if each school received such government grants per student regularly, students had to put up with costs, such as, personal expenses and boarding fees; thus Free Secondary Education system was far away from being actually free.

Free Primary Education and as a result the introduction of Free Day Secondary Education (FDSE) has only tackle the issue of fees charged, not being able to increase issues of provision of infrastructure and staffing (Ministry of Education, 2004). The result of the government capitation of Ksh.12,870 for regular schools and Ksh. 32,600 for special needs schools, would have been a reduction in the amount of fees payable in secondary schools so as to minimize the burden on the parents. However, headteachers have always felt this to be unrealistic and that fees should be raised instead. Muindi (as cited in Munda & Odebero, 2014) notes that, although government of Kenya introduced funding of
Ksh.10,265 per student per year in 2008, there were grievances from secondary school headteachers and parents about the agonizingly high costs of secondary education due to increasing prices of food, school uniforms and stationery. They observed that, the current budget estimates in public secondary schools were the lowest, taking into account the constant increase in prices of goods and services. This had an effect of putting pressure on secondary school budget estimates. The situation was even made worse by the erratic disbursement of the funding which was still inadequate to sustain the targeted vote heads areas, such as, laboratory equipment, tuition fees and stationary, teaching materials, continuous examinations, electricity, water, conservancies and students’ activities (Shikanda, Odebero & Byaruhanga, 2013).

Another notable way of financing of secondary education in Kenya has been the Secondary Schools Bursary Scheme which was introduced in the 1993/1994 financial year with the objective of cushioning the poor households from the impact of poverty, inflation and the effects of HIV/AIDS (MoEST, 2003). According to the Ministry of Education (2005), the main objective of the scheme was to improve access and to ensure high quality secondary school education for majority of Kenyans. The thinking behind the Secondary Schools Bursary Scheme was to transform into reality the suggestion that no child who qualifies for secondary education should be deprived of access due to lack of ability to pay school fees. At beginning of the scheme, finances were given out directly to the secondary schools from the Ministry Headquarters, depending on the school’s student enrolment and need. Schools were required to share out the bursary funds based on the guidelines issued by Ministry of Education. At the school level, the school Board of Management (BOM) with the help of teachers, identified needy students who would
benefit from Secondary Schools Bursary Scheme funds. It was later found out that the school authorities were not in a better position of identifying the needy students. In 2003, the Ministry, together with other education stakeholders, resolved to amend the scheme in line with government policy instead of sending funds from headquarters direct to schools, the funds went through constituencies.

In the year 2011, the British government, which is one of the major donors in the Kenya Education Sector Support Programme (KESSP) hired independent consultants who worked with the Ministry of Education to audit the programme. The audit was completed December, 2011 but the findings were revealed much later (13th June, 2011) by the then Finance Minister. The findings revealed that Ksh 4.6 Billion could not be accounted for, prompting the British Government to cut down its aid to education by 300 million in the next financial year and opting to channel their aid through Non-Governmental Organizations until the MOE adopted prudent financial management systems (Muindi & Wafula, 2011). Lack of confidence by donor agencies in the financial management of government departments has had great budgetary implications leading to delays and shortfalls in disbursement of funds for education programmes. Financing of education in Kenya is a partnership of the government of Kenya and donor agencies. Sometimes due to bureaucracies in the processing of the funds, delays are experienced causing panic and outcry among the school stakeholders (Wafula, 2012). The magnitude of this delay was at its climax in Second Term of 2012, with the Permanent Secretary in the Ministry of Education writing to the Treasury seeking urgent allocation of funds to save the twin learning programmes (Siringi, 2012). While confirming release of the delayed funds, the Minister for Education stated that the funds could not be disbursed to schools
immediately due to the constitutional requirement under article 221, which requires that budget making process undergoes wider consultation (Anami, 2012). When schools found it difficult to maintain children in school without funds they were sent home to collect the supplementary fees which sometimes resulted in them dropping out of school hence wasting the investment made through FSE. Socio-cultural factors, such as, truancy, pregnancies, early marriages, drug abuse among others are quite common at secondary level. This has also resulted to drop-out hence low enrolment.

Government funding programmes have made considerable contribution to transition from primary to secondary school. It is impressive that the rate has steadily increased from 45.8% in 2003 to 59.9% in 2008 and over 70% in 2010 (Republic of Kenya, 2009), and 72% to date as announced by the Minister of Education during the release of 2010 KCPE results. The greatest increment was realized between 2008 and 2010 with the introduction of free secondary tuition in 2008, and increase in bursary allocations. The introduction of tuition free secondary education saw an increase by 15% which raised enrolment from 1,180,267 in 2007 to 1,382,211 in 2008 (Republic of Kenya, 2009). According to 2009 census report, enrolment of secondary level was approximately 1.8 million.

There is need for the government to exploit options of targeting financial assistance to benefit the needy and vulnerable groups more on the basis of household incomes. One effort would be to enhance transparency in allocation of bursaries so that the targeted group benefits. Free tuition secondary education would also be more beneficial to the needy if the concept of vertical equity would be embraced (Mualuko & Lucy, 2013).
Access to secondary level would also be enhanced by addressing geographical disparities. For instance, in Kakamega County where most boys drop out of school after grade 8 to join the body boda business, while girls join the house help activities, more incentives should be given to divert their interest towards education. The government should exploit the possibility of expanding non-formal schools at the secondary level and improve their quality since they may be more successful in attracting students in marginal areas as well as non formal settlements. They should also be cost effective to the overburdened parents from the low income bracket. The government should formulate policies that can regulate charging other levies such as motivation fees which drain the poor parents to benefit teachers already on the payroll. The government should formulate ways of universalizing parental charges on education by school managers to help the poor parents from being exploited. Threatening school managers with stern warnings over overcharging fees beyond the government recommendation without action has not yielded any fruits. Indeed, more and more ways are being formulated by school authorities to charge more even from the poor parents (Mualuko & Lucy, 2013).

In a study by Bevon (2011) to assess the effects of subsidized secondary education on access and participation in public secondary schools in Manga district, it was found out that; although there was increase in enrolment and improved retention of students, there was inadequate tuition facilities understaffing of teachers; there was indifference of education stakeholders in supervisory and development roles; there was delay by Ministry of Education to disburse subsidized secondary education funds and poor tendering procedures and systems were found to be the major challenges that faced
subsidized secondary education programme. The study recommended; government to consider allocating more funds to subsidized secondary education programme on its annual budget and school managers to be given continuous training on financial management. Teachers Service Commission to provide enough teachers, government to consider reducing or abolishing the many levies charged, Ministry of Education to facilitate timely disbursement of subsidized secondary education funds to schools and ensure proper and continuous monitoring by the field officers to eliminate any misappropriation of subsidized secondary education funds. Thus, improved in access led to other problems of lack of adequate resources and the need for a radical shift from the way school financial and other resources are being managed.

Bevon (2011) identified six reasons that justify investment in the expanded participation at secondary level in most of Sub Saharan Africa where enrolment rates are low. First, the output of primary school systems is set to increase by 200% or more over the next 10 years as Universal Primary Education (UPE) and completion is approached; this will create huge demand for secondary places; second, the progress towards the Millenium Development Goals (MDGs) requires UPE, that depends on adequate flow of qualified secondary graduates into primary teaching which will be compromised; third, HIV and AIDS have demolished the active labour force and undermined prospects for economic growth in some Sub Saharan Africa countries; fourth, poverty reduction will stop unless income distribution improves and thus successful completion of secondary schooling is becoming difficult; fifth, competitiveness, especially in high value-added and knowledge-based sectors of the economy, depends on knowledge, skills and competencies associated with abstract reasoning, analysis, language and communication skills, and the application of science and technology;
and sixth, curriculum reform at secondary level is indispensable both because it has been widely abandoned and because expanded access will enroll children with different learning needs and capabilities.

The Government of Kenya in the cost-sharing policy, shifted the responsibility of acquiring resources to the local communities and schools. In addition, the government emphasized that the resources to be acquired should be put to the best use in a judicious management process. As regards this, the government expects various resources available to education including land, finances, teachers, time facilities and equipment to be managed properly and utilized in the most cost-effective manner in order to bring about efficient provision of quality and relevance in education (Republic of Kenya, 1988). The World Bank (1990) emphasized sourcing of additional financial support or reducing the unit cost through greater efficiency as the solution to the increasing demands of education on public finance at a time when government funds are stagnant or even declining in most developing countries. The Kenya government has recently come up with a move to control the burden of financing education on the parents by providing fees guidelines. Principals have found it difficult to run schools with the limited amount that will be collected from school fees. UNESCO (2006) found out that the level of household expenditure often depends on the type of school, as public schools require fewer fees than government-dependent or independent private schools. For example, in Paraguay, students and households play only a very small role in the financing of education in public schools. Parents make voluntary contributions to primary schools to provide additional funds for maintenance and supplies which are not covered by the state budget. In upper secondary education, families pay an annual tuition fee and other fees are paid
directly to the school. By contrast, in government-dependent private schools in Paraguay, private households pay tuition and fees at all levels since the state does not pay the salaries of all teachers. In independent private schools, private households pay tuition and fees that must cover the full cost of provision since the state does not subsidize independent private schools.

Bray and Lillis (1988) while dealing with community financing of education in less developed countries (LDC) assert that one of the bodies that can actively raise funds for the school is the pupils. They contend that most schools raise money through their own production activities. They give an example of a school in Rwanda, where the use of organic fertilizers on a small plot enabled eight and nine year old pupils to grow potatoes worth the equipment of US $120 and used the profit (which was six fold what the school received from the government) for equipment. New funding strategies aim, not only, at mobilizing the required resources from a wider range of public and private sources, but also at providing a broader range of learning opportunities and improving the efficiency of schooling. In the majority of developing countries, publicly funded primary and secondary education is organized and delivered by public institutions. In a fair number of developing countries public funds are transferred to private institutions or given directly to households to spend on educational services. In the former case, the final and delivery of education can be regarded as subcontracted by governments to non-governmental institutions whereas, in the latter case, students and their families choose the type of institution that best meets their requirements. In fact, in most developing countries, a proportion of public funding goes towards private schools and, at the same time, there are
significant private contributions to public schools. Other types of distinctions between public and private can be more relevant than sources of funding, including ownership of property and buildings, and control over curriculum, admissions, teacher appointments and payment, and supplies.

2.4 Factors Affecting Performance in Secondary Education

All over the world, education is believed to be a means of solving problems in society and uplifting the quality of life among individuals in the society. Performance at the national examinations internationally is a sensitive matter because it determines the course and expectations of an individual. Each country's nationwide examinations are based on nationalized curricula and content principles (Mbugua, Kibet, Muthaa, & Nkonke, 2012). In the Kenyan situation, academic performance in secondary education remains an issue. Most of the schools produce very few graduates with a grade of C+ which is a minimum requirement for university education in the country. This is principally so for schools that are Sub-County and County schools in the country. Factors relating to the learner, the teachers, schools themselves and the greater society, play an important role in influencing academic performance of learners. This factors are seen in the context of teacher motivation, academic qualification experience of teachers, learner characteristics, accessibility of instructional resources, school management, as well, as teaching learning methods and strategies that are being applied. World Bank (2008) notes that, retention and quality of education depends solely on how schools are managed and not on the abundance of resources. However, lack of basic teaching and learning resources and facilities and poor administration of schools resources affect performance
(Ohba, 2009). According to Ohba (2009), poor performance at the national examinations have been attributed to a variety of factors which include shortage of trained teachers, lack of essential resources, neighborhood interferences, inappropriate teaching methodologies and poor management of the little available school resources.

Although, low student academic outcomes may be blamed, to a certain extent, on poor social and economic conditions, limited student effort and/or diminishing parental involvement, can be controlled by the school system. In the United States of America, Odden and Clune (1995) in their study on improving educational productivity and school finance, point out such factors to schools productivity problems to include; poor resource distribution across states, districts, schools, and students; uninspiring use of existing funds; schools’ bureaucratic structure and focus on services that drive up costs. Although there may be no clear poor resources distribution across counties, schools and student, different levels of cost per student in different school type are issues of concern. This is mainly because unit cost is a product of total cost and enrolment, while total cost is attributable to resource inputs.

The provision of adequate instructional resources is very important to teaching and learning. Learning can occur when learners interact with the environment, the environment here refers to resources that are within reach; that enable improved learning outcome (Owoeye & Yara, 2011). Mbugua et al. (2012), suggested the strategies on how to uplift performance in mathematics to include adequate staffing, providing teaching and learning resources, reviewing the curriculum, addressing attitude issues and motivation to both teachers and learners. These findings agree with the findings of Yeya (2002) who
argued that facilities alone may not count. Other factors should always be considered in an attempt to improve performance. Mbugua et al., (2012) identified pupil-text book ratio has one other factor to be considered in attempting to improve performance; more so in rural areas.

School performance can be measured in many ways (Robert, 2005). Because of that no one characteristic can give explanation for its attainability. Scholars have different ways if identifying the variety of factors that contribute to good or poor performance in schools. To the secondary school teachers, the KCSE result performance point toward the legitimacy of their qualification as teachers and the worth of their practice and to the school management, results are useful with respect to headteacher’s efficiency and effectiveness in his supervisory mission (Nyamongo et al., 2014).

Hanushek (2008), makes an observation that the buildup of economic analysis of education proposes that, the way schooling is provided currently is very inefficient. Inputs to the schools such as teacher experience, class size, teacher experience and teacher education carry little methodical connection to student achievements. The implication is that conservative input policies may not improve learner achievement. Similarly the differences in teacher quality have been shown to be very important. Regrettably, teacher quality, identified according to the effects on student achievement, is not closely linked to the earnings or readily identified characteristic of teachers.
There is no doubt that the way a school performs in the KCSE which is a national examination, is a function of school resources (Korir, 2011). Sigilai (2013) appropriately put out that students’ academic performance cannot be achieved where there is lack of the required inputs in the teaching and learning process. Some of these inputs required in teaching and learning process include teachers, text books, equipments, instructional materials, desks, chairs, and classrooms. Although teaching and learning resources, are crucial in determining the extent of learners’ achievements, it is most likely that it can be subject to diminishing returns hence acquiring teaching and learning resources may improve effectiveness in learning; however more and more teaching and learning resources may make consecutively smaller and smaller additional benefits (Hurd, Mangan & Adnett, 2005). Korir (2011) aptly put out that inputs that have a say to low learning attainment include immaterial, poorly expressed clogged curricula, insufficient teaching and learning resources, inadequate time for instruction and inappropriate learning environment.

Adequacy of teaching and learning resources, which are the resources input, have been linked to better performance in the school system. In Botswana, World Bank (1990), related performance of students to the provision of adequate facilities, this was in reference to a survey of 51 primary schools that students performed significantly better on academic tests when they had adequate classrooms, desks and books. In Nigeria, Akinfolarin (as cited in Sabitu et al., 2012) identified facilities, such as, classroom furniture and recreational equipment, as a major factor contributing to academic performance in the schools system. Adesola (as cited in Sabitu et al., 2012) established that the level of available teaching and learning resources is certainly an advantage to the
teachers and goes to show the level of resourcefulness and dedication of the teachers toward effective delivery of teaching and learning.

A number of scholars have presented student factors that contribute to poor performance. Mwamwenda (as cited in Mbugua et al., 2012), argued that the achievement of the learners, is determined by their attitude rather than their inability to study. Although Irungu et al., (2013) observed that one valuable recommendation on how to improve academic performance was for the school management to equip science laboratory so as to enhance teaching of science subjects. They added that establishment of libraries enables students to supplement what they learn from teachers and hence improving their performance. They are in agreement with Waudo and Ouya, (2010) who posit that libraries and laboratories should be enhanced by acquiring suitable and sufficient supplies. However, the cause of most of poor performance in secondary schools and other school systems, may not be due to shortages of teaching and learning resources, but rather by active resistance by the learners (Mbugua et al., 2012).

In Nigeria, Adesina (as cited in Owoeye & Yara, 2011) noted that inadequate resources, obsolete teaching techniques, overcrowded classrooms as factors inhibiting high academic attainment. Fabunmi (1997) asserted that, school facilities when provided, will aid teaching and learning programme and consequently improve academic achievement of students. In addition to that, Arubayi (as cited in Owoeye & Yara, 2011), found a positive association between the independent variables of laboratory facilities; recommended textbooks, number of science books in the library and teachers’
qualifications and the dependent variable, the academic achievement of students in physics, Chemistry, and Biology. Moreover, Fuller (1985) identified a school library as an instructional resource which may significantly influence pupils’ achievement after controlling for pupils’ family background. Yet in Kenya, many schools do not have libraries and books, for those with libraries books are in short supply and more often outdated. Quality and adequacy of teaching and learning resources affect learning outcome. To provide adequate and quality instructional resources in secondary schools, financial resources are required. Given that a school will always strive to acquire these teaching and learning resources, they can only do so within the financial resource constraints. Cost per student (unit cost) may reflect on how a school is endowed and how it is able to provide for these teaching and learning resources.

Textbooks constitute an important tool for academic achievement. Lack of textbooks in schools is associated to the cost involved in the acquisition of these teaching and learning resources. Most writers including Heyneman and Loxley, Walberg, Beeby (as cited in Owoeye & Yara, 2011), have highlighted the contribution of textbooks to academic achievement. In Thailand Lockheed, Vail and Fuller (1986), found in their longitudinal data from a national sample of eight grade mathematics classrooms, that textbooks may have an effect on good performance by substituting for supplementary post secondary mathematics education of teachers and by delivering a broader curriculum. Fuller (1985), also found that collection of books kept for reading in the library is related to performance.
The development and continuation of school facilities, such as, classrooms, libraries, laboratories, administrative block, workshops, playgrounds, kitchen, toilets and teachers quarters in learning institutions by communities around the school, parents, church and other sponsors should be encouraged all the time. Musau (2004), posits that shortage of library facilities was part of problems affecting achievements of the learners. Availability of amenities has a direct relationship with performance of learners in examination. Nyamongo et al. (2014), argued that the presence of school buildings and other plants, contribute to good academic performance because they enhance effective teaching and learning.

In a study by Cynthia and Megan (2008), it was established that there was a strong and positive relationship between quality of school facilities and student achievement in English and mathematics. Other studies done Ayodele and Vandiver (as cited in Sabitu et al., 2012), demonstrated that there was a positive relationship between availability of facilities and student academic performances. Sabitu et al. (2012), assert that it is the general opinion of people that private schools are better, both in terms of the availability of human and physical facilities, and as a result students’ performance are better than public schools; this circumstances has made some parents to register their children in private secondary schools with an aim of securing admission into tertiary institution. These can be said of secondary education in Kenya, where parents would want to take their children to schools endowed with good resources. Enrolment in private secondary schools means additional financial resources to be paid by parents and guardians. The underlying issue here is the ability to acquire these instructional resources because it
involves huge capital outlay. The required teaching and learning resource inputs for secondary education can be traced to an individual learner’s average or unit cost.

Effective teaching which brings good learning outcomes requires a huge variety of things, teaching and learning resources which may be in the form of teaching personnel, office, storage space and instructional materials (Kafu, 2010). Most of the teaching and learning resources needed for the process of planning for instruction which range from simple materials like stationary to more sophisticated infrastructure, like computer laboratories, have cost implications to the school. Mananua (as cited in Jerotich, Kurgat, & Kimutai, 2017) point out that the issue of inadequate teaching and learning resources has been the cause for poor curriculum implementation hence poor performance. Okombo (2001), emphasizes that, the more resources we have, the more we can do in teaching. Regrettably, as Mananua (as cited in Jerotich et al., 2017) noted, economic constrains in Kenya worsens the issue of the provision and availability of teaching resources.

The performance of public secondary schools has been inadequate as per the school mean standard scores (Nyamongo et al., 2014). Given that inadequate educational resources and facilities, to a great extent, have an effect on students’ academic performance, provision of education in communities with low social economic status, always face shortages of resources and thus negatively affect students’ academic performance (Alkens & Barbarins, 2008). However, up lifting school systems and making early remedial plans help to decrease these risk factors and thus increase students’ academic
achievements. Remedial plans include seeking financial support from community based organizations and Non-Governmental Organizations.

UNESCO (2006), made an observation that the level of household expenditure, more often than not, depends on the category of the school. Public schools require fewer fees than private schools. In Paraguay, students and households participate in a very small way, in financing of education in public schools while government-dependent private schools, private households, pay tuition and fees at all levels. The same scenario obtains in Kenya; where are public and private secondary school charging different amount of fees.

According to a study by Sabitu, Babatunde and Oluwole (2012), which investigated the influence of school types and facilities on students’ academic performance in Ondo State, Negeria, it was revealed that there was a significant difference in facilities available in public and private secondary schools in Ondo State and that there was no significant difference in academic performance of students in public and private secondary schools. In Kenya, private secondary school may have better teaching and learning resources because they charge more fees than public secondary schools. Although this may translate to a higher unit cost, ability of private schools to provide teaching and learning resources may positively influence performance. Sabitu et al. (2012), recommended that there was need for procurement of more facilities in public secondary schools in order to enhance students’ academic performance and that the government, should encourage corporate organizations and individuals to donate educational facilities particularly for
the core subjects in the public secondary schools. In Kenya the possibility of procuring adequate facilities means additional funding either from the government or fee paying parents/guardians, again this measures push up cost per students. They further suggested that education resource centres, such as, teacher centres should be established by the government and that teachers should make good use of available instructional resources and improvise where there is shortage.

About more than three decades ago, Keeves (as cited in Sabitu et al., 2012), in the approaches to the goal of educational equality in renewal of Australian schools, found out that the type of school, classified as public or private, did not make any difference on students’ academic performance. However, in a study by Ajayi (2006) on the influence of school type and location on resource availability and pupils learning outcome in primary schools in Ekiti state, Nigeria, it was found out that school type makes a difference in student academic performance. This agrees with a study by Yara and Catherine (2011) who noted that the school category has an effect on the academic performance of students in mathematics.

Yeya (2002) noted that students in Boarding schools clear the syllabus on time and therefore, get more time for remedial classes and serious revision because they are continually in school as compared to day scholars. Day schools are always affected by absenteeism of both the learners and their teachers. At the end of it all, this absenteeism affects the completion of the required content in the syllabus in a particular year. Yeya (2002) further noted that students with remarkable marks at the end of their primary
cycle, keep away from day schools in preference to boarding schools. This could then be the reason why there is better performance in boarding schools in national examinations compared to Day schools. Yara and Catherine (2011), observe that school category could be used to predict students’ academic performance in mathematics. In their study they established that there is a positive relationship between mathematics and school category. Akaranga and Simiyu (2016) found out that students’ poor performance in Christian Religious Education was affected by a number of factors which include; adequacy of resources. Mbugua et al., (2012), noted factors contributing to poor performance in mathematics to include inadequate teaching and learning materials.

School size is another factor that influences students’ performance in KCSE. While some studies have revealed no significant effects of school size on learners’ achievements, others have linked class size to the outcomes. Rumberger and Palardy (2005), submit that some studies have revealed that large schools have noteworthy lower test scores than medium sized or small schools. Class size is considered as a factor that affects performance of learners. Krueger (2003), examined support on the effect of class size on learners’ academic achievement. In this study, it was found out that when studies are given equal weight, the result show that resources are methodically related to student achievement. However, when weights are in percentage to their number of estimates, resources and achievements are not systematically related. Furthermore the study performed a cost-benefit analysis of class size reduction; the result of class-size experiment implies that the internal rate of return from reducing class size from 22 to 15 students is around 6%. In another study, on the effect of school size on achievement,
Kuziemko (2006), generated different estimates for the effect of school size on achievement; the results of this study imply that smaller schools enhance both math scores and level of attendance. The same study also found out that the benefit of smaller schools prevails over the cost. However, in a study by Rivkin, Hanushek and Kain (2005), found out that, the effects of a student decrease in class size are less important than the gain of teacher quality distribution, thus stressing the significance of teacher effectiveness in determining the performance of a school.

In a study by Duflo, Dupas and Kremer (2007), on the impact of learner-teacher ratios and class size on performance, it was revealed that reducing the learner-teacher ratio without any other reorganization, contributed to reduced teacher effort, and a little and inconsequential increases in test scores. However, the same study found out that combining class size reduction with improved teacher incentives leads to considerably larger test score increases. Finally, the study found out that putting together class size reduction with entry behavior, lead to big test score increase, in spite of a learner’s entry behaviour, suggesting that the students benefits from small classes. These findings were echoed by Finn and Achilles (1999), who aptly put that there was a positive relationship between class size and students’ academic achievement. This provides impetus for class size reduction in order to benefit from improved learner outcomes. However, the findings by Bandiera, Larcinese and Rasul (2010), found slight modification, that students at the top of the test score distribution, are affected more by the changes in class size, particularly when the class sizes are very large.
Teachers are important inputs in performance in secondary school system. Adeyemi (2008) established that the experience and competence of a teacher were the most important predictors of students’ performance in all subject in secondary schools in Ondo state Nigeria. The quality of a teacher is one of the most important determinants of effectiveness in school. This effectiveness is measured in KCSE performance. The teacher is an essential part of the teaching and learning process and performance of a school. High quality teachers, time and again achieve higher than anticipated gains in student performance (Hanushek, 2003; Korir, 2011). In connection to that, teachers’ uniqueness and their feature contribute to student performance. The qualitative characteristics of teachers are of overriding importance in shaping the quality of education on which logical improvement of a child is based (Nyamongo et al., 2014). Professional qualification of teachers is considered significant in improving the quality of teaching method. A trained, qualified, experienced and a competent teacher is a benefit to the school, they are more sensitive to public examinations; they influence the learners in their performance both in classroom reflection and the national exams (Kamau, 2010; Metzler et al., 2010 & Muluki et al., 2003). However, Sallis (2002), argue that there can never be effective implementation of educational programme without adequate and appropriate physical facilities such as classrooms, toilets and playing grounds even if teachers were trained and committed. For a school to get enough trained, qualified and experienced teachers, as well as, appropriate physical facilities, huge funds are required. The consequences are cost implication to the schools which can be linked to each individual student (unit cost).
Several studies have been done on the effect of teachers in academic performance. Although some of these studies were specifically done for specific subjects, the same can be attributed to the overall context of KCSE examinations. Akaranga and Simiyu (2016) found out that students’ poor performance in Christian Religious Education was as a result of the attitude of the teachers concerning the subject, the students and teaching as a profession. While in their study, Yara and Catherine (2011), found out that there is a positive correlation between mathematics teachers’ experience, teachers’ qualification and teachers’ attitude; these factors, therefore, could be used to predict students’ academic performance in mathematics. The same views were held by Mbugua et al., (2012), who noted that factors contributing to poor performance in mathematics include poor attitudes by both teachers and students.

When teachers use a more proactive way to a problem of poor performance in the schools, improvement can be achieved. Kafu (2010) explains that, for efficient learning, teachers need to be equipped with relevant competencies to enable them adapt to the new trends in education. Ornstein and Hunkins, (2004) observes that, teachers persuade students’ learning and consequently better teachers encourage better learners. Due to the essential role teachers play in education, they need effective and sufficient education to be able to adequately carry out their roles and responsibilities. A teacher, according to Shiundu and Omulando (as cited in Jerotich et al., 2017), is the most important person in for effective teaching and learning. the result of such effective teaching is favourable outcomes. To educate learners, one should have been professionally trained. According to Otunga, Isaac, Odero and Barasa (2011), the curriculum is interpreted and given meaning
by teachers in schools. Through classroom teacher decisions, curriculum is actualized and performance improved. Teachers need regular in-service training opportunities to enhance their teaching methodology and consequently improve performance. In-servicing of teachers greatly improves the quality of curriculum implementation and hence good performance.

Although the Government and other education stakeholders continue to provide a relevant curriculum, physical infrastructure and human resource, such measures alone may not improve learning achievement without appropriate teaching methods and strategies. Inappropriate teaching methods and strategies have been associated with low academic performance in science and arts-based subjects in the national examination (Muraya & Kimano, 2011; Kang’ahi, et al., 2012). While appropriate teaching methods and strategies are likely to enhance learning achievement, inappropriate approaches are known to stifle knowledge retention and realization of learning objectives (Henson, 2004; Chang, 2010). Kang’ahi et al. (2012), found a positive relationship between teaching styles and learners’ academic achievement. Besides, learning achievement was seen to increase with more learner-centered teaching styles. Furthermore, Muraya and Kimano (2011), found that cooperative learning (learner-centered) approach resulted in significantly higher mean score achievement, compared to regular teacher-centered approach. The study concluded that learner-centered teaching methods were more effective in the teaching and learning process. Tella, Indoshi and Othuon (2010), noted that, teacher-centered methods often resulted in students not enjoying lessons and missing the benefits of intellectual discovery. Such methods may not be effective in implementing a curriculum. A study conducted by Dunkin (as cited in Jerotich et al., 2017) found that
student learning achievement was significantly related to the teaching methods and strategies used by teachers. In this regard, the methods used to deliver lessons had a greater impact than the content covered in a course of study.

Socioeconomic background of the students influenced student success more than a variety of school and teacher characteristics (Picus, 1995). Student having poor academic backgrounds (entry mark at form one) depicted by their performance at the Kenya Certificate of Primary Education (KCPE) may not perform well at the Kenya Certificate of secondary education (KCSE) (Irungu & Grace, 2013). Irungu et al., (2013), noted that poor performance in the national examination may be due to disregarding the concept of entry behaviour value addition by not setting the targets to be achieved. They further noted that parents support towards learning affect performance. Student characteristics, such as, poor health, physical or learning disabilities influence student attainment, not only, at an individual level, but also, cumulatively (Rumberger & Palardy, 2005; Korir, 2011)

In a study by Akaranga and Simiyu (2016), it was found out that students’ poor performance in Christian Religious Education was affected by attitude of the student about the subject and students’ resolve to perform better. Similarly, Yara and Catherine (2011) found out that there is a positive correlation between academic performance in mathematics and students’ attitude towards mathematics. Even though these studies were particularly about factors affecting performance in the secondary school learners
performance in specific subject, the same can be said of the overall picture at the Kenya Certificate of Secondary Education (KCSE).

Headteacher’s supervisory role on performance has been cited to be one of the factors that affect performance in the examinations. In a school circumstances, all the actions that are carried out by the headteacher, to help teachers keep and improve their effectiveness in the classroom, describes instructional supervision. The role of the headteacher in instructional supervision is, therefore, essential. To be effective in supervisory roles and thus get good performance, headteachers should have clear conditions of objective and intention; they need to attended lesson so that they are aware of what is happening in classes; they need not to wait for final KCSE results so as to take action (Okumbe, 2001 and Katana, 2007)

A study by Nyamongo et al., (2014), to determine the relationship between school based factors and students’ performance in public secondary schools in KCSE, revealed that headteachers supervisory function, teacher qualifications, teaching and learning resources had a positive correlation with students’ outcomes. The same study noted that the there was a negative correlation between school facilities and students’ performance in K.C.S.E. Nyamongo et al. (2014), made further conclusion that there was no statistically significant relationship between school based factors and students’ performance in K.C.S.E.
World Bank (2008), noted that retention and quality of education depends solely on how schools are managed and not on the availability of resources. Mbugua et al., (2012), noted factors contributing to poor performance to include under staffing and lack of motivation. Sigilai (2013), established that academic staffing affect academic achievement; understaffing and lack of motivation in a school can affect the entire subjects in the same way and thus the overall performance of a school at the KCSE examinations. The role of headteacher in any school setting is to ensure that there are enough teachers to teach the entire subject on offer. This can be achieved by efficient utilization of the teacher resource, even in situations where there are some short-term shortage of teachers. Again the headteacher is responsible for motivating everyone in the school; be they teachers, students or even the support staff. Other primary responsibility and expectations of school headteacher which affect performance include, the provision of physical facilities, such as good classrooms, libraries, playground, laboratory and study areas; provision of high and quality support to instruction and rewarding exemplary teachers and students with scholarships, certificates and merits. Again all this measures require finances to implement.

Ornstein and Hunkins (2004), argue that, successful implementation of curricula requires careful planning which focuses on three factors; people, programs and processes; Planning processes address needs and resources required for carrying out intended action. Kafu (2010) outlines management skills as Total Quality Management (TQM) and the strengths, weakness, opportunities and threats (SWOT) models which are useful in the process of planning for instructions. The ability of the headteacher to achieve this greatly
affects the performance of a school. Secondary school management is obligated to make available leadership that encourages TQM practice so as to accomplish set objectives. School employees need to be encouraged to participate actively in decision-making process, which will make them competent in escalating the quality of learning. In order to provide quality services, strategic quality planning is imperative while human resource development is crucial in schools because it inspires employees so as to realize their maximum potential. BOM and the chairpersons in secondary schools need to provide the essential leadership that would encourages TQM practices required for schools' uninterrupted enhancement; the bulk of schools are not dedicated to strategic quality planning, nevertheless they do support human resource development initiatives (Waithanji, Kuria, & Onyango, 2006).

Other important challenges facing education in Kenya relate to the attainment of Education for All (EFA). The key concerns for the government are access, retention, equity, quality and relevance, and internal and external efficiencies within the education system (Achoka, Odebero, Maiyo and Mualuko, 2007). The effectiveness of the current 8-4-4 structure and system of education has also come under increasing scrutiny in light of the decline in enrolment and retention particularly at the primary and secondary school levels. The Government has shown her commitment to the provision of quality education and training as a human right for all Kenyans through the introduction of Free Primary education in 2003 and Free Secondary Education in 2008. The launch of Free Secondary Education (FSE) in 2008 was meant to address illiteracy, low quality education and low completion rates at the secondary level, high cost of education and poor community
participation. Unlike the FPE initiative, which has reference to enormous conventions, resolutions and literature, FSE initiative was triggered by the politically charged climate that engulfed the country during the 2007 general election, which implies that the country may not have been very prepared for its implementation. However, there was government commitment to increase transition from primary to secondary by seventy percent in all districts (Ohba, 2009). The FSE policy is in line with the government commitment to ensure that regional special needs and gender disparities are addressed (Ohba, 2009). What is not clear is whether FSE is capable of ensuring high levels of retention at the secondary school level.

2.5 The Concept of Unit Costs in Education and Academic Performance

Early Production Function research which was modeled around classical economic theory attempted to correlate a set of educational input to a single output. Because of the complexity of the education process and attendant factors which are outside the control of school system, it has been difficult to isolate statistically significant one-to-one correlations between inputs and student learning (Picus, 1995). The most common outcomes measured in such studies are standardized test results, graduation rates, dropout rates, school attendance patterns, and labor-market outcomes. On the other hand, inputs usually include per-pupil expenditures (unit cost); student-teacher ratios; teacher education experience, and salary; school facilities; and administrative factors (Picus, 1995).

The concept of unit cost is borrowed from production economics where in the process of production inputs are valued in terms of how much they cost. When the cost obtained is
distributed to the quantity of output that has been produced, we achieve cost per unit of output (unit cost). This cost (unit cost) can also be referred to as recurrent cost or the average variable cost. In education, Psacharopoulos and Woodhall (1985) define unit cost of education as the cost of educating one student in a given year. MoEST (2003) defines unit cost of education as the total expenditure incurred by a school in a given year divided by the total enrolment. Thus unit cost of education is the cost a school uses to meet the educational needs of each pupil/student in a year. It refers to recurrent expenditure incurred for giving education to one student in one year (recurrent expenditure per student). In a Kenyan secondary school, one calendar year is equivalent to one academic year where a student will transit to the next class. Thus when we quantify what a particular school spends in that particular year, then distributed equally to all the learners enrolled in that school, in that particular year, we get unit cost/recurrent cost per student/average variable cost.

Pritchett and Filmer (1999) articulate that Education Production Functions presents an authoritative insight into a constructive theory of distribution of educational spending in a way that resources are allocated to maximize educational output. Johnson and Onwuegbuzie (2004), describe Production Function as the expertise where inputs are mixed to produce outputs. The inputs of education system include spending per student (unit cost) while outputs are quantifiable and include examination scores. Boissier (2004), submit that Education Production Function consider schools as creators of education through use of labour, capital and other inputs to produce specific output. The same perspective is held by Korir (2011) who asserts that education production function
approach considers the school system as a production unit which has an enrolment of students and consumes resources, such as, teachers and books to increase usefulness which can be seen in terms of higher educational attainment. Higher educational attainment or improved examination results is considered a distinct cumulative measure which tells us about school performance.

The ordinary in education system are the inputs. Inputs are things such as teaching and learning resources, quality of teachers and family characteristics, on the other hand, is the outcome, which is the student achievement. Hanushek (2007), emphasize that each of these inputs should have a constructive effect on student achievements. It is important to note that inputs and outputs of an education system are under the control of policy makers. However, Pritchett and Filmer (1999), argue that an optimizing model of educational expenditure allocations foresee that usage of inputs should be identified so that the marginal product per dollar of each input is equalized. That means any model of optimizing the allocation of educational spending, should ensure that the additional benefits equalize the additional input.

The Elimu Yetu Coalition (2004) point out that the unit cost of education include all costs incurred in providing learners with educational services which may be grouped into direct (variable costs) and indirect costs (fixed costs). Indirect costs of educating a child in a secondary school may comprise cost of transport to and from school, cost of school uniforms, and other levies, such as, activity fees and school development fees. On the other hand, direct costs of education consist of boarding fees, cost for tuition and
examination fees. Cost per learner (unit cost) gives a clear picture concerning the level of expenditure in education at any level. This will help in coming up with more appropriate cost and financing policies of education and training. However, where dropout or repetition rates are high the cost per pupil or student as a measure of unit cost of education, may not be the most appropriate way of measuring the costs attributable to one student (Psacharopoulos and Woodhall, 1985). To come up with actual unit cost of education, authentic components of the costs are appropriately expressed and estimated. Various cost areas are, therefore, identified and calculated to add up to the total expenditure in a given year. When total cost is considered in relation to learners enrolled in that year, we arrive at unit cost or cost per learner.

MoEST (2002) notes that, in secondary education, the unit cost of education was more than three times the cost of standard one primary school pupil. Moreover, the cost of educating one student differs depending on the location of the school, school category and type of the school. However Cox (2002) reports that when examining Utah’s administrative cost per student, it showed small difference between large and small districts, unless the enrolment dropped below 1000 students, where the administrative costs rise. The results of New York’s school consolidation analysis indicate potentially sizeable cost savings from consolidation of districts with fewer than 500 pupils. This study states the upper limit but no lower limit as far as enrolment is concerned.

The objective of the introduction of Free Day Secondary Education (FDSE) in Kenya was to benefit the economically disadvantaged members of the society with the ultimate
aim of addressing issues of access and quality of education. The idea of financial
disbursement per student is an appreciation of the concept of unit cost. The government
allocated Ksh. Ksh. 10,265 for each student from 2008; the amount has been increased to
Ksh. 12,870 per student per year. Thus the total allocation for each school has always
been disbursed to the school based on the number of learners enrolled in that particular
school. The consideration of the allocation based on each student is an appreciation of the
need to estimate cost according to the number of learners in a school. Demands placed
upon obtainable finances have been progressively on the rise. Given the fast population
growth rate churning out a continually growing number of students eager to join the
education system at all levels, all indications is that, providing education is currently
beyond the capacity of Kenya’s normal education budget (Karemesi, 2010). Because of
the budgetary constraints, it is worth establishing unit cost as one way of managing cost
of education. The amount being spent on each student (unit cost) paints a clearer picture
on the question of cost of secondary education. Based on the concept of estimating cost
per student (unit cost), the government of Kenya has issued fee guidelines for secondary
schools in which school are expected to follow depending on the type of the secondary
school. The guideline in the secondary schools fees structure further breaks down the
total amount of fees payable by each learner to the various vote heads. Table 2.3 below
has been used to tabulate this breakdown.
Table 2.3 Recommended Fees Structure for Secondary Schools. (Kenya) 2016

<table>
<thead>
<tr>
<th>Vote heads</th>
<th>Sub County/ Day Schools (Ksh.)</th>
<th>National, Extra County &amp; County Boarding (Ksh.)</th>
<th>Special Needs (Ksh.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching Learning Materials</td>
<td>4,792</td>
<td>4,792</td>
<td>9,067</td>
</tr>
<tr>
<td>BES and Meals/L</td>
<td>0</td>
<td>32,385</td>
<td>32,385</td>
</tr>
<tr>
<td>RM &amp; I</td>
<td>1,886</td>
<td>3,192</td>
<td>2,422</td>
</tr>
<tr>
<td>LT &amp; T</td>
<td>1,833</td>
<td>2,421</td>
<td>2,144</td>
</tr>
<tr>
<td>Administration Costs</td>
<td>1,572</td>
<td>3,316</td>
<td>1,900</td>
</tr>
<tr>
<td>EWC</td>
<td>3,151</td>
<td>7,802</td>
<td>4,047</td>
</tr>
<tr>
<td>Medical</td>
<td>689</td>
<td>786</td>
<td>1,614</td>
</tr>
<tr>
<td>Activity Fees</td>
<td>1,256</td>
<td>1,398</td>
<td>1,462</td>
</tr>
<tr>
<td>Personal Emolument</td>
<td>5,755</td>
<td>8,672</td>
<td>13,155</td>
</tr>
<tr>
<td>PTA Development, Projects</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Insurance (Medical &amp; Property)</td>
<td>1,310</td>
<td>1,660</td>
<td>1,614</td>
</tr>
<tr>
<td>Total School Fees</td>
<td>22,244</td>
<td>66,424</td>
<td>69,810</td>
</tr>
<tr>
<td>Less GOK Subsidy</td>
<td>12,870</td>
<td>12,870</td>
<td>32,600</td>
</tr>
<tr>
<td>Total Fees Less GOK Subsidy</td>
<td>9,374</td>
<td>53,553</td>
<td>37,210</td>
</tr>
</tbody>
</table>

In the fees structure, schools have been grouped into Day schools, Boarding schools or special needs schools. In addition, the fees structure further breaks down the total fees payable to vote heads namely; Teaching learning materials, BES and Meals, LT & T, Administration costs EWC, Medical, Activity fees and Personal emolument. Each of the type of school has been allocated varying amounts for each of the vote heads. In total, learners in Day schools are expected to spend up to Ksh. 22,244 of which government subsidy pays Ksh. 12,870 for each student and parents are expected to pay the balance of Ksh. 9,374. In Boarding schools, learners consume an amount not exceeding Ksh. 66,424. Given government subsidy of Ksh. 12,870 per student, parents are then required to pay the remainder of Ksh. 53,553 or less for this category of schools. For special needs
schools, learners are allocated a maximum of Ksh.69,810. With government subsidy of Ksh. 32,600, parents can pay up to an amount of Ksh. 37,210 per student per year for this category of schools. It is interesting to note that all this allocation as guided by the fee guidelines. This fees guideline is based on the expenditure per learner in a year (unit cost).

In the year 2017, the government of Kenya made amendments to the fees schedule and issued guidelines for the implementation of Free Day Secondary Education. The changes were to take effect in the year 2018. The purpose of the changes was to provide quality basic education which has been the priority of the government. The guiding policy documents in this undertaking were Kenya Vision 2030 and the Basic education Act of 2013. The Kenya Constitution, 2010 which guided the development of the Basic education Act of 2013, recognizes education as a human right and thus the decree that it will be free and compulsory. Consequently, the government issued new capitations to secondary schools. It is important to note that, in the past, the government paid Ksh.12,870 per learner per year. This was part of the fees required in secondary schools. In an attempt to achieving a 100% transition for all learners and easing the burden from parents, the parents component of Ksh 9,374 was taken up by the government and for that reason, learners in Day secondary schools, are not required to pay any school fees. From 2018, all learners in public secondary schools receive Ksh 22,244. This capitation per learner per year, are expected to be utilized for vote heads such as; teaching learning materials and examinations Ksh 4,792; repairs maintenance and improvement ksh 2.886; administration costs ksh 1,572; electricity water and conservancy ksh 2,151; activity fees
Ksh 1,256; personal emoluments 5,755; and medical and insurance 1,999. The government further promised to disburse the allocation in December, April and in August every year. The disbursements are in the ratio of 50:30:20. Although, according to the government, day scholars are not supposed to make any payments to the schools except for lunch program, schools continue to require parents to pay for a number of other school activities.

It can also be noted that learners in boarding secondary schools, each receives, from the government, a similar capitation as those of the Day scholars. However, given the Boarding components; they will be required to pay upto ksh 32,385 per learner per year. Thus learners in boarding secondary schools pay a total of Ksh 53,554 per learner in a year for National schools and Extra county schools in major towns. All other schools are required to receive upto ksh 40,535 per student per year. However, Boarding schools require learners to pay for other vote heads not listed in the schedule. Again, disbursements have not been timely and have not been coming as scheduled. Special needs secondary schools which cater for learners with visual, physical, hearing and mental impairment, are receiving an enhanced capitation to Ksh 57,974. Parents of this group of learners are expected to pay Ksh 10,790 per year per student. The guidelines further stipulate obligations to the secondary school managements, principals and parents. School managements are expected to ensure prudence in the use of the allocation and to follow the laid down financial regulations as indicated in the financial management instructions’ handbook. All stipulated accounting procedures and other necessary measures, which include cost-saving, must be adhered to by all schools at all times. On
the other hand parents were obligated to meet the cost of school uniforms, boarding related cost, lunch for day scholars and other projects of infrastructure upon approval by the County Education Boards in consultation with the BOMs and Parents Associations.

In Kenya, the Ministry of Education in 2017 identified five key vote head areas under the FDSE. The first area of expenditure is the administration costs. This vote head is composed of office stationary, communication and postage, telephone bills, printing of receipts, LPO, cash books, ledger books, non-teaching staff uniforms, office cleaning materials, refreshment, files, folders, servicing office machines, photocopiers and general meetings. The second vote head area is for the repairs, maintenance and improvements. Under this vote head, a number of items are listed which include school improvements, paint, nails, cement, repairs, fencing, renovations, implements for grounds men, drainage among others. The third vote head area is local transport and travel. Components for this vote head include travel and accommodation for BOM and PA, travel and subsistence for teachers when they go for seminars and workshops, vehicle maintenance, fuel, lunch allowance and educational tours. Electricity, water and conservancy is another area of expenditure. This vote head comprises; electricity and water bills, sewage, plumbing, boreholes, bulbs/tubes, electrical fittings, solar panels/maintenance, generators, fuel for generators, disinfectants among others. Activity fees are also indicated as a vote head where a number of items are listed under it. These include extra curricula activities, music, drama, science congress, games, central activity fund, transport and accommodation for students. Such vote heads are expected to bring order in matters of expenditure.
Ngetich et al., (2014) in a study to determine unit costs of secondary schools in Nandi North District in 2009, found out that a total of Ksh. 363,383,481 was the expenditure for the entire district, which was equivalent to Ksh.41,768 per student (unit cost). The findings point out that the average unit cost per District school was Ksh 34,849, while the average unit cost for the Provincial schools was Ksh. 50,966. Unit cost for Private schools stood at Ksh.35, 778 while unit cost for public schools was Ksh.43,219. From the study, the main recommendation was that secondary schools should prioritize expenditure areas to pay more attention to areas such as acquisition of teaching and learning resources. However this study did not attempt to established the relationship between unit cost and academic performance in the different types of schools. Also, the study did not explore strategies for managing unit cost to enhance academic performance of learners in secondary schools.

Examination results in both the KCPE and KCSE differ from school to school, from region to region and also by gender (MoEST, 2002). Academic performance at the secondary school level, is given emphasis in Kenya; this may be because it is used for certification, selection to tertiary institutions, and search for employment and above all, used as a yardstick to evaluate educational achievements at the secondary school level. The Kenya Certificate of Secondary Education (KCSE) examinations are administered nationally to test a wide range of subjects as stipulated in the secondary school curriculum. To achieve better academic performance, sufficient human and physical resources, in addition to effective secondary school management, are required (MoEST,
To obtain sufficient teaching and learning resources, finances, such as government grants, school fees collected from parents, donations and contributions from the community and Non-Governmental Organizations (NGOs) are required by secondary schools. For better performance in secondary education to be achieved, the indispensable physical and human resources must be obtained at a cost. This cost can be attributed to each individual student in the secondary school system (unit cost). The higher the overall cost of teaching and learning resources the higher the unit cost. While sufficient resources are required, the cost implication becomes an inhibiting factor. In a scenario obtained in Kenya today; where there is increasing poverty levels in the majority of households, a large number of parents with children in the secondary school level, are not in a position to adequately pay for these required teaching and learning resources. The implication to this, may be poor performance in the national examinations.

A World Bank Report (as cited in Ayodele, 2012), pointed out that one reason for the low quality of education in Africa is that expenditure per student (unit cost) is very low by world standards. Although Hanushek (1981), found out that there is no significant relationship between school expenditure and students’ academic achievement, analysis of education cost provides valuable direction for education managers and other stakeholders on the tangible cost required in producing a graduate at any level of education. Such an analysis of education cost gives an insightful understanding into the model of educational expenditures (Akpotu, 2008). Educational cost analysis, is time and again useful, in identifying the possible cost reduction strategies that can be employed from time to time. The need for cost reducing actions and policies are necessary towards cost effectiveness
in secondary schools. The current study seeks to determine unit cost and explore strategies for managing unit cost in order to enhance performance of learners in secondary schools.

The issue facing educators and government alike, is how to provide quality, relevant and accessible secondary education given the scarcity of resources. Watkins, Watt and Buston (as cited in Sika et al., 2013) observed that, in both developed and developing countries, there is increasing demand for effective secondary school system for their underprivileged youth. The challenge to most governments, particularly those in developing countries, is how to provide quality and effective secondary education at lower unit cost. Inadequate financial resources, are often seen as the origin of poor quality education, limited access and retention (CIDA, 2002). Education stakeholders, more often than not enthusiastically consider adding more financial resources to secondary schools which will develop the quality of secondary education and by extension improved school performance. However, studies in Education Production Function in both developed and developing countries, have yielded inconsistent and mixed findings on the question of more resources for improved performance.

A study by Sika et al. (2013), on the impact of unit cost on academic performance of public secondary education in Siaya, Kenya, found out that, although the payment by parents to funding secondary education, has steadily been increasing between 1997 to 2007, academic performance has been fluctuating over the same time. This study concluded that an increase in unit cost does not necessary mean an increase in
performance index, and therefore, allocating more resources in the schooling process, as a way of improving achievement, need to be done with a lot of caution. They observed that school administrators should pay more attention to the purchasing power than the absolute or constant performance index which was previously demanded by society. Sika et al. (2013), recommended that, the government need to reinforce the audit wing of the Ministry of Education so that it can examine the effectiveness of utilization of monetary resources collected and allocated to secondary schools and that there should be some efforts made towards sharing resources among District secondary schools and Provincial secondary schools through prearranged concurrence. It is, therefore, observed that emphasis is given to prudent management of resources rather than the question of how much resources can be channeled to the secondary school system. This study, therefore, was set to explore strategies for managing unit cost to enhance academic performance of learners in secondary schools.

However, different findings were observed in a study by Munda and Odebero (2014), which was aimed at determining how costs relate to the academic performance of District and County schools. In their study, it was established that there were disparities in costs of education both within and between the two categories of County and District schools. The average per student direct unit cost for county schools was almost twofold that of District schools. They attributed this to discrepancy in funding of these schools and that school fees, were levied in a random way because there was no guideline. Given that better funding in many ways affect the quantity and quality of educational resources which schools acquire, these disparities between County and District schools could
explain the better students’ performance in county schools (Munda & Odebero, 2014). It is worth noting that availability of finances have a bearing on the amount or the sufficiency of teaching and learning resources. However as Sika et al. (2013), posit that, giving out more resources in the schooling system as an approach of enhancing performance, should be considered with a lot of prudence.

Hanushek (1989), in his study on the Impact of Differential Expenditures on School Academic Performance, analyzed results of 187 Education Production Function studies published during the previous 20 years, and found out that, there was no systematic positive relationship between student achievement and inputs namely; per-pupil expenditures (unit cost), student-teacher ratios, teacher education experience, teacher salary, school facilities and administrative factors. However, Hanushek’s findings have been challenged by recent studies which use more refined research techniques. Hedges et al. (1994), in their meta-analysis of the effects of differential school inputs on student outcomes, reanalyzed Hanushek’s work and discovered that an increase in average spending per pupil (unit cost), would significantly increase student achievement. Similarly, Crampton (1995), made a presentation to the annual conference of the American Education Finance Association on an analysis of the relationship of educational inputs on school outcomes, noted that expenditures seemed to matter when they bought smaller classes and more experienced, highly educated teachers.

In Nigeria, a study by Ayodele (2012), on the relationship between private cost and students’ academic performance in secondary schools in Ekiti state, revealed that parents
wielded great power in preparing and enabling students to continue in schools. The study further discovered that poor performance of students in their public examination was true and that the level of students’ performance may not have been a good mirror image of the private cost. In this study, it was found out that, there was no significant relationship between private unit cost per student of secondary education and students’ academic performance in secondary schools in the State. Out of these findings, the study recommended that, it was necessary to increase budgetary allocation for secondary education in the State, provide adequate instructional resources in all secondary schools and that education Resource Centers, should be created in all the Local Government area headquarters by the State Governments. However, this study did not attempt to determine the influence of unit cost on academic performance of learners in the types of secondary schools.

A study by Munda and Odebero (2014), on the Influence of Education Costs on Students’ Academic Performance in Kenya, found out that, fees charged in Bungoma County were decided by school Boards of Management (BOM) in consultation with the Parents and Teachers Associations (PTA) and with authorization from the County Education Board (CEB). The study found out that, in addition to the government subsidy which came in assured tranches, the majority of the schools in the County collected less than 70% of their other budgeted income which almost wholly came from fees. The study further noted that, income trend indicated general rise in levies that go with the increasing cost of living. To be able to collect revenue, school headteachers have to regularly send students
home to collect fees. Such a move destabilizes students’ performance or may ultimately make them drop out of school.

Ekanem and Ekpiken (2013), in their study explored unit cost of education as a determinant of students’ learning achievement in universities in Cross River State of Nigeria. The study found out that unit cost of both academic and non-academic staff could not establish the enormity of students’ academic attainment in the universities studied. Ekanem and Ekpiken (2013), observed that unit variable costs of education vary with changes in the number of student enrolments and it is a good quality measure of effective cost of education. The study concluded that even though qualified staff is indispensable, it was not a sufficient condition to the assurance of better learning outcome. Ekanem and Ekpiken (2013) in their study recommended that qualified university staff, should be effectively utilized for greater efficiency in the university system. Although this study was done in universities which are, another level of education system, the fundamental principles of cost cannot be overlooked. The study suggested that by engaging qualified staff, cost implications are obviously higher. It noted that this does not necessarily translate to better learning out comes. At secondary school level this ideas can be borrowed when analyzing and finding the link between cost per student (unit cost) and academic performance.

2.6 Measures to Managing the Increasing Costs of Education

Olembo and Cameroon (1986), indicate that school principals face increasing administrative difficulties. These include inadequate and badly constructed building; shortage of books and equipment; lack of proper school furniture, particularly desks; poor
or sometimes non-existent maintenance and repairs; untrained and half trained teachers who seldom stay long; over-crowded classrooms; poor communications and few supporting services especially health services. As a result the administration of schools has become one of the most taxing jobs in the whole education system. In relation to the structure of physical facilities, Olembo and Ross (1992), indicated that the development efforts of school head teachers have sometimes been frustrated because of lack of space for extension of the school, lack of housing for teachers, and worse still, lack of essential facilities like desks, chalk, books and so on. Some schools do not have adequate classrooms and where they exist, they are sometimes in very poor condition, which is hazardous to students and staff.

Verspoor (2008) observed that the report of Secondary Education in Africa Initiative (SEIA) concluded that the main problem facing secondary education in Sub-Saharan African countries is the private cost of public schooling. This comprises of official government tuition and boarding fees, contributions to school management committees, as well as, costs such as textbooks, learning materials, school supplies, private tuition, transportation and clothing. These costs are significant in most countries. It is, therefore, not surprising that faced, in addition, with severe competition for places and concern about the perceived decline in the quality of instruction, transmission of social values and safety in government schools, most parents enroll their children in private schools. The (SEIA) report estimated that 13% of the secondary students in Sub-Saharan African countries are enrolled in private institutions. In reality this proportion is likely to be significantly higher, since many private schools are not registered. There is a big
difference between private schools: some are high cost elite schools, while others are traditionally church sponsored schools that usually offer programs of acceptable quality at medium or low cost. More recently, an increasing number of, for profit institutions providing programs of varying but often low quality and low cost. In some countries teacher salaries are unsustainable multiples of Gross National Income per capita. In others, they are so low that teachers are almost forced to find a second job or leave the profession. In most countries, the output of teacher training programs is insufficient to meet the demand. In others, the government cannot afford to hire all those that graduate. As a result, untrained teachers often make up 20% of the cadre and can account for as much as 50% with most working as temporary or contract teachers; yet, teachers’ salaries often crowd out allocations for other expenditures, resulting in severe shortages of textbooks and instructional materials, adversely affecting the effectiveness of instruction (Verspoor, 2008).

Verspoor (2008) posits that expanded access to education and improved quality of secondary education in Sub-Saharan Africa are important ingredients for economic growth and development in the region. The Secondary Education in Africa (SEIA) synthesis report makes this point by bringing together a considerable quantity of analytical work sponsored by the World Bank and by several African and international partners. Verspoor (2008) further argues the case for broad and equitable access for a basic education cycle of 8 to 10 years, as well as for expanded education and training opportunities. Education professionals, decision makers, and staff in international
agencies will want to consider the policy options in this report for secondary education financing, curriculum and assessment, and service delivery (Verspoor, 2008).

Alternative sources of financing education are trendy issues given the limited resources in our society. Developing countries, have for a long time, continued to experience shortage of resources for education. There is need to explore other areas of income generation so as to supplement the main stream sources of educational expenditure. Lewin (2006), underline the need for reforms that contain costs, enhancement in internal efficiency and encourage effectiveness in relation to secondary education in Sub-Saharan Africa. Owino and Abagi (2000) agrees with Lewin (2006) and notes that, there is need to make secondary education more affordable, managing and scrutinizing the implementation of financing of education through policy review, legislation and effective implementation of such policies in our education system. Due to the cost implication and competing needs, there is scarcity in the resources required for effective teaching and learning in secondary education in Kenya. Because of the scarce resources, it necessary that the effectiveness of cost-saving measures should be evaluated. More than four decades ago, Coombs (as cited in Ngetich, et al., 2014)) concluded that educational costs have small importance or worth except when they are assessed against educational results and in the same strength educational results are assessed against the objectives of that education.

It is generally agreed that cost of education has been increasing. Yet secondary school principals and other stakeholders in education demand additional finances to run their schools. Tobyehatch, (as cited in Munda & Odebero, 2014) observes that education costs
have been rising faster than consumer price indices. As a result of this, there is mounting significance of effective accounting and management of school finances in addition to the acknowledgment of the need for a valuable cost consideration arrangement. There is need to prop up schools so as to identify and implement financial models that may be practical in creating a center of attention and keeping more students in schools (Lima, 2011). Such efforts will help improve access, quality, relevance and retention in secondary school education.

Guided by two theories; the Systems Resource Model and the Human Capital Theory, a study by Gongera and Okoth (2013), on Alternative Sources of Financing Secondary School Education in the Rural Counties of Kenya, sought to; identify the alternative sources of financing secondary school education and to identify challenges facing schools in financing secondary education. The findings of this study revealed that the main sources of financing secondary education were; service based incomes (20%), commercial based (35%) and agricultural based (45%). This study further revealed that earnings from this sources enhanced management in secondary schools through salary payment for support staff, BOM employed teachers and various student motivational activities in their schools. Gongera and Okoth (2013), found out that part of the revenue was used to procure more teaching and learning resources and upgrading of school physical facilities. However, other studies have found out that even with income generating activities, school financial muscle may remain poor. Nzoka and Orodho (2014), in their study on school management and students’ academic performance, established that, only half of the schools had activities that generate income and that such
activities were done on small scale, the small scale nature of this activities could not yield enough income that can help in subsidizing the free learning funds or improve teaching and learning facilities.

Given the current financial difficulties being experience in the country, headteachers should work out ways of generating income so as to alleviate existing financial problems that cause student absenteeism, frequent transfers and indiscipline in the school. Such income generating activities will also address the question of inadequate teaching and learning resources and school facilities (Nzoka & Orodho, 2014). Gongera and Okoth (2013) recommended that the Ministry of Education should come up with policies on how schools can put into action the alternative sources of financing secondary school education to ease the pressure on government funding of education institutions. They observed that this would make sure that fees charged is subsidized and thus become affordable to most of the households and hence increasing access and improve retention. Although, Gongera and Okoth (2013), sought to identify alternative sources of financing secondary education which may eventually reduce financing burden for both the government and households, the study did not attempt to establish unit cost of secondary schools and the influence of educational cost on academic performance of learners.

School income generating activities have been identified as one way of helping needy students by giving them bursaries to enhance retention and performance. Ipata (2011) in a study on cost saving measures on access, retention and performance in public secondary schools in KCSE examination in Teso District, found out that most schools were under
staffed. Given that most schools are understaffed, finances are required to hire B.O.M teachers to alleviate the shortage. Employment of this teachers leads to high expenditure. The result of this high expenditure will be a high unit cost which in turn affects retention and performance. Thus with income generating activities, needy learners would be assisted to remain in school all the time. This will again improve their performance.

Income generating activities can be a constructive source of supplementary income for secondary schools. There are schools which are endowed with a variety of natural resources which can be utilized to earn income for the school. Other schools are situated in strategic locations that can enable such schools to start business ventures that are beneficial both to the schools and to the communities they are located. In a study by Omukoba., Simatwa, and Ayodo (2011), their findings revealed that public secondary schools can potentially generate additional income using resources available within them; schools in urban setting can get the most out of their locality in town to engage in both commercial projects, as well as, agricultural activities, such as, selling produce and renting out school facilities. They further observed that money generated from income generating activities in schools, had been used in purchasing teaching and learning resources, spending on improvement, repair and maintenance and developing infrastructure, as well as, spending on motivation of student and school staff. Although a study by Nzoka and Orodho (2014) on Secondary School Management and Student Academic Performance, found out that, about half of the schools in Embu County, Kenya had Income-Generating Activities, but the income generated did not translate into lowering fees charged by the majority of the secondary schools. However, some of the major management difficulties of Income Generating Activities included poor record
keeping, lack of dedicated qualified personnel, shortage of funding, and in some cases, limited of land (Omukoba et al., 2011). Because of the importance of Income Generating Activities in generating additional funding for secondary schools, the government should come up with a clear structure which can be applicable widely in developing a policy framework on the issues of planning and general management of Income Generating Activities. Furthermore, given the limited finance and the competing needs at our times, there is need to develop entrepreneurial culture in our people. This will go a long way in turning ideas into viable income generating activities as well as developing skills for effective management of this project.

Nzoka and Orodho (2014), posit that headteachers should think up strategies such as organizing community fundraisers and the Old Students' Associations coming together to help secondary schools provide teaching and learning resources. Such initiatives will go a long way in addressing school retention and effective delivery of quality secondary education. Other scholars have suggested the need to make use of the private sector in education to raise funds for education. Private sector will then reduce the overall financial requirements of education sector. Korir (2011) recommends bringing in the private sector to develop education as this can show the way to improved quality education by assembling available organization capacity, providing added choices for families and mounting competition among education providers as in Peru. Presence of the private schools in education sector strengthens education system as it is an effective cost distribution instrument (Clegg, Bregman & Ottowanger, 2007).
Onsomu et al., (2006) in their study to Examine Financing of Secondary Education in Kenya, found out that provision of quality secondary education is essential in coming up with opportunities and payback of social and economic development. They noted that educational requirements for secondary education will probably increase in the medium term, this is because of the introduction of Free Primary Education (FPE) in 2003. Given that enrolment in secondary education was expected to grow by 115 percent from 0.9 million in 2004 to 2.7 million by 2015, there have been increased resource demands in the secondary education sub-sector. Because of the foregoing, financing of the expected expansion of secondary education demands for a serious identification of financing options that are sustainable and able to make the most of cost effectivness in resource consumption. Onsomu et al., (2007), further examined some of the practicable financing options for secondary school education to include: instituting ways for increasing secondary education monetary allotment on non-salary expenditures, for example, bursaries and capital expenditure; bringing down secondary education unit costs through growth and quality improvement of Day school; enhancing efficiency in teacher and classroom operation; improving partnerships and useful mobilisation of external assistance.

Another way of managing cost in secondary schools is for the management to be efficient. Efficiency in educational management in secondary schools deals with using management principles in coming up with effective resources utilization towards achievement of educational goals (Nzoka & Orodho, 2014). This effectiveness, according to UNESO (2006), is seen by the extent to which schools normally meet the objectives of
the society to which they are established. Sabitu, Babatunde and Oluwole (2012), observe that secondary schools, irrespective of ownership, are expected to function in agreement with the accomplishment of the national education objectives, students are expected to perform brilliantly in the final examination because this verify the quality of output of secondary schools; this is one of the considerations used to determine the effectiveness of a school system. This is in agreement with Philias and Wanjobi (2011), who emphasized that the better, the performance of the students; the more effective the system is assumed to be. Kenya Government has shown a lot of dedication to the provision of quality relevant and accessible secondary school education. This has been done through continuous allocation of financial resources, employment of qualified teachers and setting up of supervisory quality assurance department (Republic of Kenya, 2012).

One way of determining internal efficiency of a secondary education system is by taking into account the maximum number of learners enrolled in Form 1 and those who graduate in Form 4. If the findings indicate, say near or one hundredth percent progress to the next class it means the system is an efficient one, it has no wastage (Onsomu et al., 2006). Other internal efficiency tools include survival rates, completion rates and dropout and repetition rates. High repetition rates may be associated with high dropout rates and low survival levels. High completion rates means efficiency in the system in terms of movement from Form 1 to 4 and that survival is assured if students manage to enter first grade of secondary education.
In a typical production process we consider inputs and the output of the process. Inputs are the resources or factors of the production process while an output is the product of the process. In an attempt to achieve efficiency in school, one understandable strategy is to reduce non instructional expenditures and restructure the instructional program. In comparative terms, Kenya spent over 6.57% of GDP on education over the financial year period 2011/12, public spending on education was 5.3% of GDP in the UK, and 3.6% of GDP in East Asia (UNDP, 2012). Yet these allocations may not be enough, the devastating consequence of this insufficiency is the attempt to stretch out resources to cover the quickly rising number of students, consequential in decline in quality of education provided. From this, we may deduce that nations that spent more on education, like Kenya could improve academic achievements by paying more more attention on inputs-output maximization and in particular focusing on cost effectiveness in the education process.

Nzoka and Orodho (2014) posit that improving school leadership is an effective way of raising efficiency of secondary education across sub-Saharan Africa. Increasing demand for education has been boosted by various policy interventions. According to the Education Act 2012, the Government of Kenya promised to make sure that disadvantaged children of school going age are not discriminated but rather helped to pursue and complete basic education (Republic of Kenya, 2012). Moreover, Kenya has developed a number of policies in an attempt to provide quality education, improve transition, access, completion and retention rates (Nzoka & Orodho, 2014).
Levin (1997), in a study on raising school efficiency identified five dimensions of productive firms, efficient schools would have; a clear objective function with measurable outcomes, incentives linked to success, efficient access to information, adaptability and use of the most productive, cost-effective technologies. In another kind of efficiency research explores schools’ resource allocation practices Monk (1996), examined how teacher resources are distributed and utilized at various levels of the New York State K-12 system. The study found a 55% increase in secondary level special education instructional resources between 1983 and 1992, alongside modest increases in allocations of science and math teachers. In a study of New York schools, Jefferson, (2005), found out that fourth and eighth graders’ math achievement was positively associated with lower student-teacher ratios and with expenditures on instruction and school district administration. However expenditures on facilities, recruitment of highly educated teachers, or school level administration were not significantly related.

Korir (2011) suggested efficient consumption of teachers by increasing average teaching load at the secondary school level, putting a lower limit on number of learners for the optional subject and retraining some of the underutilized teachers to specialize in the optional subject for which supply exceeds demand. Although retraining some of the underutilized teachers might not have been achieved, rethinking of the same strategy may help in addressing the question of increasing the cost of education. Another way of effective utilization of teachers is through lifting up student-teacher ratio by growing enrolment up to optimal level, or else, as teacher input rise and the number of students decline, unit cost rises (Hanushek, 2007; Kosgei & Rono, 2004). To reduce cost of
education, World Bank (2005) proposes increase of class size through reduction of all secondary schools with very small sizes, increase pupil-teacher ratio and balance employment of teachers. However, there is a wide agreement among researchers that text-books and teaching materials, are of comparatively greater significance to improving school performance, at the margin, than increasing inputs and increasing class sizes (Korir, 2011).

Due to increasing educational cost in the middle of difficult economic times, the call for cost reduction in education sector has been of concern to many Kenyans. We need to utilize the resources at our disposal to the maximum benefit. Nafukho (as cited in Ngetich et al., 2014) recognizes increasing school size by consolidating the strategies of reducing cost per student per year (unit cost) as it was done for independent school districts in the U.S.A when small schools were consolidated. Related to that, deployment of educational resources can be achieved by increasing school size from a single stream to a minimum of four streams in boarding secondary schools and three in day schools (Musoga, 2005).

Another way of saving cost in our education system is to steer clear from the idea of setting up new schools, instead we need to expand and put into optimal use the schools that are already available before attempting to construct new ones. Kosgei and Rono (2004) propose that the available facilities in small size schools should be expanded instead of starting to build new ones. There have been a number of efforts to encourage the growth of Day schools as a way of increasing participation in secondary education and reducing cost of secondary education to be paid by parents (MoEST, 2005; TSC,
In addition to that IPAR (2007) recommends the abolition of public Boarding secondary schools in Kenya. This is part of cost reduction strategy, aimed at improving access, quality education and retention of learners in schools and above all improving learner outcomes.

Shepherd (2009) aptly point out that there was need for improved schools for a lesser amount of money as in United Kingdom. At a time when more classrooms are required and the enormous resources required for construction, expenditure that is utilized for this purpose need to be considered in relation to cost to each student. This is essential through a clear enumeration of cost of construction which shows avenues for validation of school available ways of construction methods and in the end bring down construction cost. Unit cost of building a classroom can be brought down by assessment of the option of technology and material to be used in building in relation to cost; repairs requirements just like in community run construction and in use of the neighborhood available input (World Bank, 2005). To lower the cost of building, Korir (2011) proposes the use of locally available building materials and by marshalling community labour which is relatively cheap.

Soon after independence, Ominde (1964), observed that complete use of space is only obtainable where there are three or four streams, hence large schools benefit from maximum economies of resources available, such as, building and equipment. Related to that Kosgei et al., (2004), and Ngetich et al., (2014), aptly point out that recurrent expenditure per pupil/student (unit cost), had an inverse relationship with the size of the
school; for an increase in size of the school, there is a reduction in recurrent expenditure and because of that, the school benefits in making a huge amount of savings. The same was echoed by Korir (2011), who argued that large schools are more successful in improving student learning as compared to the small sized schools.

In order for the secondary schools to have better learner achievements and accomplish the most wanted educational results, school management need to put in order a well thought out valuable budgets. Bisschoff and Mestry (2009) illustrated that a budget is the mission statement of the school which is expressed in monetary terms; as a tool used by the management, it brings about the achievement of the school’s goals and objectives and strategies. Basically, a budget is an enumerated summary of expected income and expenses for a given period. Effective budget statement enables an organization to put into maximum utility all the physical and human resources at their disposal. Secondary schools are examples of such organizations which require a properly prepared school budget. In secondary school system, schools are required to construct a considerable provision in their budget for acquisition of teaching and learning resources, boarding stores, repairs, maintenance and installation; allocate funds for electricity, water, activity, medical service, local traveling and development project. When financial resources are sufficient and are effectively and efficiently managed, schools will be in a position to provide the required teaching and learning resources and thus translate this to better achievements in the examinations (Ekanem & Ekpiken, 2013).
One other way of managing cost of education is by striving to benefit from economies of scale. Duncombe, Miner and Ruggiero (1994), define economy of scale as the connection between average cost (cost per unit of output) and the level of output. Economies of scale are explained in relation to the average cost per unit of output produced. In a situation where the average cost is declining, the producer of the product in question is benefiting from efficiency gains due to economies of scale. Provided the average cost of production is declining the firm has an observable advantage in increasing the output level. In an ideal world, the firm would want to be at the minimum average cost point. Nonetheless, in the short run, the firm may have to produce at an output level that is higher than the one that yields the minimum average total cost.

There are a number of studies that have investigated the idea of economies of scale in education. Some authors conclude that for certain school sizes, there is indication of economies of scale. There is substantiation of economies of scale in primary schools (Geraint, 1993 & Hough, 1981). In Britain, verification on the existence of economies of scale is provided by Coatesworth (as cited in Ngetich et al., 2014), who undertook a study in a sample of primary schools in the mid-1970s. From this study it was established that cost per pupil varied little from school to school in the sub-sample of schools with enrollments of 70 or more pupils. It was further found out that, with respect to the smaller schools, unit costs rose to a large extent as school size diminished. This findings cannot be said to mean the existence of an optimal school size, but it shows that the minimum efficient size of a representative primary school is in the area of seventy (70) pupils. These findings agree with the prior findings of Cumming (1995), where it was
established that in primary schools, unit costs decreased as school size increased up to an enrolment of eighty (80) pupils.

The issue of optimal school size is considered because of the cost savings that a school makes on increasing its school size and thus reaping from advantages of being large (economies of scale). Ngetich et al., (2014), in a study to Determine Unit Cost of Secondary Education, found out that, the optimal school size for secondary schools in Nandi North District in the year 2009 was 770. This was the enrolment level (school size) at which a school will be operating efficiently. At this level all the resources are put to maximum use, there are no wastages, there is no excess capacity. At this level, it means as enrolment increases, the unit cost decreases but the decline continues to decrease as we approach the optimal school size of 770 students. Beyond the optimal level, any increase in school size, will lead to an increase in the unit cost. This implies that any enrolment beyond the optimal school size leads to diseconomies of scale. This means that, any school operating below the optimal school size should increase enrolment; by doing that, cost per student will be decreasing and this is one of cost saving measures that can be exploited in secondary schools. A study by Lee and Smith (1997) investigated the correlation between high school size and learners learning. It was found out that the ideal high school, defined in terms of effectiveness enrolls between 600 and 900 students.

In Kenya, Ngala (1996) investigated economies of scale and optimal size of Youth Polytechnics in Homa Bay and Migori Districts. The study established that the optimal size of the Youth Polytechnics was one hundred and ten (110) trainees. Kosgei and Rono,
did a study similar to that in Nandi District secondary schools and discovered that the optimal size of secondary schools during the year of study (1999) was 528 students. The study identified the savings that would originate from increasing enrolment from 300 to 400 students was Ksh. 9,631.20 per student. Kosgei (2001), advised that there was need for the adoption of cost-saving measures, such as, raising enrolment up to the optimal level in order to counteract the increasing unit cost.

A study by Muyia (1995), it was revealed that the optimal size of schools in Kakamega District during the year of investigation (1989) was 574 students. The study concluded that unit costs of secondary schools in the District could be lowered so that the difficulty of meeting costs of secondary education in the District is reduced. It was also apparent that the variables namely, teacher qualification, students/teacher ratio and average teacher salaries are responsive to unit costs. The study recommended that in a situation of under-enrolled schools in the District, unit costs could be lowered by increasing school size towards the optimal size (574). On the other hand, for over-enrolled schools they needed to reduce school size and thus avoid diseconomies of scale from setting in and thus avoid incurring higher unit costs,

Economies of scale are the advantages that accrue to an economic entity when operating at its optimal size. Economy of scale is the relationship between average cost (cost per unit of output) and the level of output; related to that is the term ‘economies of size’, which means per pupil costs (unit cost) that can be reduced by expanding the student population (Duncombe et al., 1994). On the other hand, Coombs and Hallack (as cited in
Rono & Kosgei, 2004) point out that technical schools having a number of different crafts on offer, would experience problems in staffing and financing of their programmes unless enough students were enrolled in each area of specialization. For that reason, to achieve economies of scale, the study suggested that technical schools should be rearranged so that each technical school specializes in only two or three areas, and students from all over the country to be enrolled to any suitable school.

Studies done in Kenya by Nafukho (1995), Ngala (1996), Kosgei and Rono, (2004) Ngetich et al., (2014) acknowledge the fact that the concept of optimality is dynamic and is bound to change with time as cost increases. From the time when these studies were done, many changes have taken place in the education sector in Kenya; the rate of inflation has increased leading to the increase in the cost of running Day secondary schools and Boarding secondary schools; there has been a number of changes in the micro and macro-environment. Gitonga (2008), noted that, the cost of running Day secondary schools and Boarding secondary schools has been on the increase. With the introduction of Free Primary Education and Free Day Secondary Education in the year 2003 and 2008 respectively, cost of education at secondary school level will be unbearable. Therefore, the concept of optimal school size needs to be considered as a way of cost saving measure.

Reduction in cost can also be achieved through a cutback in the number of non-teaching employees to a level which is economically viable and putting every employee to produce optimally. Other measures of cost reduction include intensive conservation
methods on electricity bills, water bill; travel and expenditure on school activities (Boss, 2009). This is a pointer to the need to have expenditure priorities right, given the limited resources at the disposal of the school management. Sometimes, regardless of available funds, schools tend to utilize their resources in the disproportionate way between direct instruction and for support services (Picus, 1995). Others have however, shown that, most funding are utilized for specialists and other services and not to the core instructional program (Odden, 1997). These scholars, therefore, are emphasizing the need to have priorities right so that available funds go to acquiring the much needed resource inputs for better performance.

The current debate over the cost-effectiveness of our education system in general and secondary schools in particular, is due to the public’s desire for increased accountability and efficiency in public education system; an enterprise which consumed Ksh. 319.5 billion in the 2015/2016 fiscal year, out of this, secondary education was allocated Ksh 33 billion (Republic of Kenya, 2016). Taxpayers want to know where their money is going and whether additional funds are justified. Odden and Clune (1995), recommended that schools focus on clear outcomes, such as, making educational management more decentralized and participatory and restructure school financing to be more equitable and goal directed. With the dramatic increases in funding over recent years, what can we say of the advancement in student achievement? Though we do agree on some issues such as: resources are shrinking; how are funds actually spent; schools must discern more cost-effective ways to allocate and utilize existing resources, is there any link between cost per student (unit cost) and academic achievements?
Out of their study, Munda and Odebero (2014), made several recommendation which included, the need for the government of Kenya to regularly review school requirements so as to avoid arbitrary setting of fees in public schools; to encourage more private school investors through prearranged inducement systems to partake in provision of secondary education thus reducing pressure on government; and to advise public schools to always link their spending to targeted activity outcomes which are within their means. Institute of Policy Analysis and Research (IPAR) (2007), pointed out issue of effective governance in secondary schools as possible cost reduction strategy. They allude to the fact that good governance is imperative for most favorable performance of schools and at addressing the rising cost of secondary school education in Kenya. Accountability in the management of secondary school is one way of ensuring that there is effectiveness and efficiency in the public sector. IPAR (2007), appropriately observed that poor governance in schools leads to uncontrolled resource acquisition which in turn increases the overall transactional cost of secondary education; the net effect will be increased unit cost. Increased unit cost affects access, retention and quality of education in secondary schools and may have an influence academic performance.

According to Waudo and Ouya (2010), schools that are able to do well have managed to do so through employment of teaching methods planned based on knowledge of participatory learning and giving confidence for the character of enquiry among learners. This leads to additional learning, way of thinking, self-assurance and exceptional performance in the national examinations. School that are performing put in place sound
student assessment system, ensures there is physical infrastructural growth and productive use of available facilities.

The literature reviewed indicated that there was a knowledge gap on the influence of unit cost on learners’ academic performance in the types of secondary school in Kenya. Various studies and most of them, suggested policy interventions which are geared towards meeting the high costs of education. There is expanding demand for education in Kenya; the implication of this is that huge financial resources will be required to provide quality, relevant and accessible education. There is discussion on education resource input and their influence on academic performance. A study by Munda and Odebero (2014) found out that to be able to collect revenue, school headteachers have to regularly send students home to collect fees, such a move destabilizes their performance or may ultimately make them drop out of school.

Although Hanushek (1989) found out that no systematic positive relationship between student achievement and inputs, which included per-pupil expenditures (unit cost), Hedges et al., (1994) reanalyzed Hanushek’s work and they discovered that an increase in average spending per pupil would significantly increase student achievement. A study by Sika et al., (2013) concluded that allocating more resources in the schooling process as a way of improving achievement, need to be done with a lot of caution. In Nigeria a study by Ayodele, (2012), found out that the level of students’ performance may not have been a good mirror image of the private cost. It was reported by Hanushek, Mayer and Peterson, (1999), that in 12 studies on expenditure per pupil in developing countries, half
were statistically significant, and the other half were found to be statistically insignificant. Whether secondary schools endowed with more financial resources do better than those less endowed, remains an issue which requires exploration in developing countries. The question which arises, is unit costs fundamental in contributing to secondary school performance? Are changes in secondary school unit cost consistent with changes in academic performance and how do they relate?

According to a study by Sabitu et al., (2012), it was revealed that there was a significant difference in facilities available in public and private secondary schools in Ondo State and that there was no significant difference in academic performance of students in public and private secondary schools. However, in a study by Ajayi (2006), on The Influence of School Type and Location on Resource Availability and Pupils Learning Outcome in Primary Schools in Ekiti state, Nigeria, it was found out that school type makes a difference in student academic performance. This agrees with a study by Philis and Wanjobi (2011) who noted that the type of school has an effect on the academic performance of students in mathematics. A study by Munda and Odebero (2014) established that there were disparities in costs of education both within and between the two categories of County and District schools. The average per student direct unit cost for county schools was almost twofold that of District schools. Does this disparity in unit cost the reason for the differences in academic performance?

Nafukho, (1991) carried out a study to uncover the optimal size of secondary schools in Kakamega District as Rono and Kosgei, (2004) undertook a study to Determine the
Optimal Size and Cost Efficiency of Nandi district secondary schools, Musoga, (2005) carried out a study on cost saving measures in public secondary school in Kakamega District. In addition to these studies, Ngetich et al., (2014) did a study to determine unit cost in secondary school in Nandi County. These studies did not attempt to establish a link between cost per student (unit cost) and student’s academic achievements. This current study therefore, designed to fill the gap by analyzing the influence of unit cost on learners’ academic performance in the types of secondary school in Nandi County, Kenya. By filling this gap, the study would contribute to the body of knowledge available on this subject.
CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter presents the research design and methodology that was used in the study. The chapter therefore comprises; philosophical paradigm of the study, the research design, a description of the study area, an outline of study population, target population, sampling procedure and sample size. The chapter also describes the research instruments that were used in the study namely survey questionnaires and documents analysis. The chapter ends with validity and reliability of the research instruments, ethical considerations, data collection procedures and data analysis procedures.

3.2 The Study Area

The study was conducted in Nandi County Kenya. Nandi County is situated in the North Rift of Kenya, occupying an area of 2,884.4 square kilometers with its headquarters at Kapsabet town. The County borders Kakamega County to the West, Uasin Gishu County to the North East, Kericho County to the South East, Kisumu County to the South and Vihiga County to the South West. It is geographically bound by the equator to the south and extends northwards to latitude 0034’N. The western boundary extends to longitude 34045’E, while the eastern boundary reaches longitude 35025’E. The County is divided into four sub-counties and six constituencies namely: Mosop, Chesumei, Emgwen, Aldai, Nandi hills and Tindiret. Appendix 15 shows a map of the County. The county is predominantly inhabited by the Nandi people. The mainstay of the population of Nandi County is agriculture ranging from tea, livestock keeping and maize farming. According
to the 2009 census, the County is estimated to have had a total population of 752,965. Given the county’s fertility rates standing at 4.0, increasing population is likely raise the demand for places at all levels of education (Republic of Kenya, 2015). Just like other Counties in Kenya, cost of secondary education is of concern keeping in mind that most of the inhabitants are small scale farmers. The struggle for good performance at the national examinations is even of greater concern. It is believed that the study area gives a wide and varied views of the problem of this study. However, it should be observed that the choice of the area of study did not render other parts of the country less significant.

3.3 Philosophical Paradigm of the Study

A research paradigm is a set of beliefs which influence what should be studied, how to conduct research and how the results will be interpreted (Bryman, 2004). A research paradigm sets the standards for justifiable work within science. It comprises a technique of looking at the world and interpreting what is studied and giving a suggestion on how research should to be done, by whom, to what degree of participation and interpretation (Kothari & Garg, 2014). There are three major paradigms namely positivist (functionalism), constructionism (interpretivism) and the critical realism (Konsolaki, 2012). The paradigms worldviews stand on assumption which include; what is out there to know (ontology), what and how can we know about it (epistemology), the role of values (axiology) the process of research (methodology) and the language of research (rhetoric) (Kimberly, 2008; Marshall, & Rossman, 2014)

Castellan (2010) asserts that quantitative research identifies with positivist perspective. Designs and techniques that generate quantifiable data were used in the quantitative
approach (Creswell, 2013). This paradigm places emphasis on facts and causes of phenomenon that, phenomena should be isolated and that observation should be repeatable. Positivist has had a predominantly successful connection with the physical and natural sciences. Using a set of standardized research methods to test hypothetical understanding, the scientific method of the natural sciences applies assumption that reality can be measured and verified objectively (Creswell, 2013).

To the interpretivist philosophy, the study of phenomenon in their natural environment together with the acknowledgment that scientist cannot avoid affecting the phenomenon they study, is very important. They acknowledge that there may be numerous interpretation of reality but upholds that these interpretations are in themselves a component of scientific knowledge they are pursuing. The qualitative approach uses designs, techniques and measures that do not produce discreet numerical data; in qualitative approach, data is obtained through the use of words from the interaction between researcher and the respondent (Glesne, 2015). Qualitative approach to research, therefore, deals with subjective assessment of attitudes, opinions and behaviour. Research in such a situation is a function of researcher’s insights and impressions (Silverman, 2016; Kothari, 2004).

On the other hand, pragmatists connect the choice of approach directly to the purpose and nature of the research question posed (Creswell, 2009). The pragmatic worldview is a philosophical foundation for mixed methods studies and expresses its importance for the
centre of attention on the research problem in social sciences research, and then using pluralistic approaches, to develop knowledge about a problem (Creswell, 2008).

Post-positivist offers that, reality is, not only, constructed but it, is use constructed differently by different individuals (Gall, Borg & Gall, 1996; Henderson, 2011). Post-positivists work from the supposition that any portion of research is influenced by a number of strong theories apart from the one which is being tested. However O'Leary (2004), gives a definition of post-positivism which aligns in some logic with the constructivist paradigm, making a claim that post-positivists see the world as indistinct, variable and multiple in its realities. While O'Leary (2004) makes a suggestion that post-positivism is intuitive and holistic, inductive and exploratory with findings that are qualitative in nature. Mertens (2005), asserts that positivists and post-positivist research is most commonly aligned with quantitative methods of data collection and analysis.

This study adopted a post-positivist worldview as its philosophical paradigm in order to analyze the influence of unit cost on learners’ academic performance in the types of secondary school in Nandi County, Kenya. This option allows for a mixed method approach that leads to the use of survey research design. Keeping in mind the review of modern social research methods Haq (2015) believes that mixed methods research yield more precise results other than relying on either qualitative or quantitative methods alone in explanation of complex social issues. Prediction was made based on the previously observed and explained authenticity and their inter-relationship. This study used questionnaire and document analysis to collect data from principals and secondary
schools visited. Areas of interest were the recurrent expenditure, enrolment and performance at the KCSE examinations.

3.4 Research Design

A research design is a plan for the collection, measurement and analysis of data (Kothari & Garg, 2014). It is a basic arrangement of conditions for collection and analysis of data in a way that aims to combine relevance to the research purpose with economy in the process (Creswell, 2013). According to Creswell (2009), research designs are plans and procedures for research that cover the decision from wide-ranging assumptions to meticulous methods of data collection and analysis. Traditionally, there are three suitable research designs namely quantitative, qualitative and mixed method designs. This study employed a mixed method design which is an approach that associates both qualitative and quantitative forms (Ayiro, 2012). Mixed method involves the use of both qualitative and quantitative research designs together so that the overall strength of a study is greater than either qualitative or quantitative research (Creswell & Plano, 2011).

This study employed survey research as a research strategy. In this case, survey research deals with the incidence, distribution and interrelations of educational variables; it gathers data at a particular point in time with the intention of describing the nature of the existing conditions, identifying the standards against which existing conditions can be compared and determining the relationship that exists between specific events (Orodho, 2004). Survey research as a strategy attempts to collect data from a representative sample of the population in order to determine the current status of that population with respect to one or more variables, and generalize its findings (Kothari & Garg, 2014). Creswell (2013)
agrees to this argument and suggests that survey enables taking a sample of population to generalize results for the whole population, resulting in-depth, rich and meaningful research findings. Survey research was adopted because the population to be studied was large to be observed directly and thus useful because of the economy both in time and money. Survey is good and an easy way to collect data from the point of views or opinions, information on attitudes and reasons for behaviour (Nachmias & Nachmias, 2007). Survey research seeks to obtain information that describes existing phenomena by asking individuals about their perceptions, attitudes, behaviour or values (Creswell, 2013). This research strategy was useful for collection of information on variable cost and academic performance thus enabling calculation of unit cost and eventually examining the influence of unit cost on academic performance.

According to Babbie (2004) a survey includes cross-sectional and longitudinal studies using questionnaires or structured interviews for data collection, with the intent of generalizing from a sample to a population. This study specifically employed cross-sectional survey. A cross-sectional survey is intended to make a comparison of numerous population groups at a particular point in time. Although cross-sectional survey is limited by the single survey nature and may not be appropriate to making decisive interpretation about the direction of any given association between variables, cross-sectional survey can be helpful in representing entire populations, rather than subsets. This can be very advantageous when taking into consideration policy changes. This study collected data using questionnaires and document analysis so as to establish and examine the influence of unit cost on academic performance of learners in the types of secondary schools in Nandi County, Kenya.
3.5 Target Population

Target population refers to an entire group of individuals, events or objects having a common observable characteristic (Nworgu 1991; De Vos 2002). Target population is the aggregate of all cases that conform to same designated case of specifications; it is to the target population that the results of a given study are generalized (Gall et al., 1996; Nachmias & Nachmias, 2007). This study targeted all the principals of all the public secondary schools in the Nandi County, Kenya. At the time of collecting data, there were 186 public secondary schools in Nandi County. Principals of these public secondary schools were targeted for this study because they were the holders of authority to incur expenditure and, therefore, have authority to give information concerning any financial issue in their schools. This study, therefore, collected data from the principals of these public secondary schools.

3.6 Sampling Procedure and Sample Size

Sample is a small number of target population; sampling is a procedure of selecting component of an aggregate and on its foundation, inferences about the aggregate is established (Kothari, 2011). Sampling is a process of selecting a given number of subjects from a defined population as a representative of that population. Silverman, (2016), argues that sampling in education research is usually conducted in order to sanction in-depth the study of part, rather than the whole of population. Furthermore, noteworthy results are realized when reasonably large sample that is within convenient confines is selected (Mwiria & Wamahiu, 1995). According to Kothari & Garg (2014) sample design is a specific plan determined ahead of any data, is actually collected for
achieving a sample from a given population. Kothari & Garg (2014) further argue that a complete enumeration of all items in the population is known as a census inquiry and that when a universe is small it is not necessary to resorting to a sample survey. However, this study did not enumerate all the items in the population but rather did sample. In this study, the sample size was determined by use of the published table by Krejcie and Morgan (1970) (appendix 9). Krejcie and Morgan (1970) presented sample sizes that would be required for a given permutation of accuracy and assurance levels. The table was, therefore, suitable for determining sample size from a given population which was finite (known). Information available at the office of the Nandi County Director of Education indicated that the County had a total of 186 secondary schools in the year 2015. Based on the table by Krejcie and Morgan (1970), a population of 186 secondary schools yielded a sample of 123 secondary schools. Table 3.1 below, shows the type, the target population and the sample size of the secondary schools in Nandi County.

**Table 3.1: Target Population and Sample**

<table>
<thead>
<tr>
<th>Type of School</th>
<th>Population</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day Secondary Schools</td>
<td>141</td>
<td>93</td>
</tr>
<tr>
<td>Boarding Secondary Schools</td>
<td>45</td>
<td>30</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>186</strong></td>
<td><strong>123</strong></td>
</tr>
</tbody>
</table>

*Source: Researcher (2015)*

Table 3.1 above indicates that out of a total population of 186 schools, a total of 123 secondary schools were sampled. Out of a population of 186 secondary schools in the County, 141 were Day secondary schools and 45 were Boarding secondary schools. Therefore, the sample size for each of the secondary school type in the study was
identified on a proportion basis. Consequently, 93 Day secondary schools and 30 Boarding secondary schools were sampled. Furthermore, to identify individual secondary schools which were visited for data collection, systematic random sampling was done separately for each of the two types of secondary schools. List of Boarding secondary schools and that of Day secondary schools was made. The population frame was randomized, the researcher then decided on the sampling interval by dividing the total population by the sample size. The sampling interval was found to be 2. The researcher then proceeded by selecting from the table of random numbers the starting point and eventually picked the 2\textsuperscript{nd} school in each of the two secondary school types until the required sample size was achieved. A total of 123 secondary schools, and therefore, the same number of principals of the sampled secondary schools in Nandi County, were the respondents in this study.

3.7 Research Instrument

This study used both questionnaire and document analysis as tools of data collection so as to grant a comfortable base for data analysis. These instruments were constructed based on the objectives of this study. The instruments are explained in turn in the following sub-sections.

3.7.1 Questionnaire

A questionnaire is a technique of data collection which consists of questions printed in a specific order on a structure where respondents respond to (Kothari, 2008; Bryman, 2004). According to Kothari (2008) questionnaire method of data collection is at the heart of a survey process. Questionnaire is a convenient tool, particularly where there is large
number of subjects to be handled because it makes possible quick and easy derivation of information within a short time (Gall et al., 1996). According to Kothari (2004), questionnaire allows respondents adequate time to give well thought out answers. The selection of this tool was informed by the nature of data to be collected, the number of respondents, time which was available and the objectives of the study. This instrument was also cost effective and could enable easy coding and analysis of information collected (Kombo & Tromp, 2006). This study used both closed and open ended questionnaires which were developed in consultation with research supervisors and colleagues to capture data on enrolment, levies charged by the school other than what is in the fees schedule, performance in KCSE examinations and principals’ views about cost of secondary education in the sampled schools. Open ended questions were considered appropriate because they permitted a greater depth of response and enable respondents to give an insight into their decisions. Although the questionnaire yielded more quantitative data, useful qualitative data was also captured.

3.7.2 Documents Analysis

In addition to the questionnaire, this study used document analysis for data collection. Document analysis is a method of obtaining data without the information of the subject in an indirect and non expressive way (Gall et al., 1996). Although document analysis suffers from the problem of some documents may be sensitive and not publicly available, document analysis is a useful method to investigate issues, such as, decision making and strategic planning and resource allocation (O’Leary, 2014). Document analysis is an important research tool and is an invaluable way of triangulation, it helps seek convergence and corroboration thus breeds credibility and reduces the impact of potential
bias (Bowen, 2009). Whereas, according to Creswell (2003), document analysis may have an inadequacy on the erroneous or unfinished information, the researcher took a lot of care by making assessment of the documents collected and used. In this study, the sources of documentary data used in this study included fee guidelines from the MoEST, school fee structures, school financial statements and data on KCSE scores; these documents were found complete, in correct form and adequate. Other documents included circulars from the Ministry of Education on free Day Secondary Education that indicated the allocation of the funds into different vote heads of the secondary schools. These documents were analyzed for information relevant to this study. Fee structures were collected and analyzed in order to get the direction of expenditure and charges on ‘other’ levies and gauged adherence to the fees guidelines issued. Fees guidelines from the MoEST were collected, and analysed to identify the limits for each vote expenditure and for comparison of the two types of secondary schools. Collection and analysis of circulars from the Ministry of Education on the free Day Secondary Education was necessary for it contained regulation on government subsidy disbursement to schools. KCSE performance for the schools visited were analysed to corroborate information collected in the questionnaire. From yearly income and expenditure accounts, actual cost incurred for each vote head and total cost, were used to calculate yearly unit cost in each of the years, 2012 to 2015.

3.8 Validity of the Research Instrument

Validity is an essential element for research instruments. There are generally three types of validities to be attained; face validity, content validity and construct validity (Taylor, Bogdan & DeVault, 2015). The predicament of validity arises because measurements in
the social sciences with very few exceptions is indirect, thus in validity the questions is “am I measuring what I intend to measure?” (Nachmias & Nachmias, 2007). Validity of an instrument or scale is the success of the instrument or scale in measuring what it sets out to measure, so that differences in individual scores can be taken to be representing true differences in the characteristics under study (Orodho, 2004). The usual procedure in assessing face and content validities is to seek advice from professionals in a particular field (Creswell, 2013). Furthermore, Best and Kahn (2003) note that, when a panel of experts are used to review the specification and the selection of items of the research instrument, the content validity of that instrument can be improved a lot. Therefore, validity of the research tool for this study was determined by having experienced team of supervisors and researchers in the School of Education-Moi University, who carefully and critically examined the questionnaires to evaluate the exactness of the items contained in the two instruments. In view of their suggestions, the research instrument was revised to remove any ambiguity, errors and add any omissions, weight and clarity before administering the instruments to the respondents. In addition, given that the instrument was piloted, the process of piloting was important in establishing the content validity of instrument and was used to improve the questions.

3.9 Reliability of the Research Instruments

Reliability is a fundamental component for research instruments; this is because a reliable measuring instrument does contribute to validity (Kothari, 2004). Reliability refers to the degree to which the scores obtained with an instrument are consistent measures (Frankel & Wallen, 2000). According to Creswell (2012) reliability is a measure of the extent to which an instrument gives consistent results or data after repeated trials. It refers to the
extent to which a test is internally consistent (Creswell, 2003). The reliability of the questionnaire and document analysis which were the instruments for this study were tested through a pilot study which was carried out in Uasin-Gishu County. This study, therefore, borrowed from the advice of Shaughnessy, Zechmester and Zechmester (2006), who posit that a pilot study may be carried out in a location that does not form part of the main research. In addition Kothari (2004) underscores the need for a pilot study and observes that:

*Before using this method (questionnaires), it is always advisable to conduct pilot study for testing the questionnaires……pilot survey is in fact the replica and rehearsal of the main survey.* (p.101)

In the pilot study test-retest technique was used in determining the reliability. To identify the number of participants for the pilot study, this study adopted the views of Creswell (2008) who suggested that, a pilot study participants should be ten per cent of the sample. The study is also guided by the views of Isaac and Michael (1995), and Hill (1998) who proposed that, participants for pilots in survey research, should be between ten and thirty. As a result, this study used thirteen principals of secondary school in Uasin Gishu County for the pilot study. Consequently, the questionnaire as the research instrument was administered twice to the same respondents with a time difference of three weeks between the first and the second test. Using the two sets of scores, Pearson Product Moment correlation Coefficient (r) was computed to establish the extent to which the instruments gave consistent measures. In this study reliability coefficient of 0.807 was obtained. According to Creswell (2013) a reliability coefficient of 0.7 and above is good to allow the study to be done. On the other hand, Nachmias and Nachmias (2007) notes that a reliability coefficient of 0.8 or more, may be suitable to establish reliability in the
scores. However, Gall, Borg and Gall (1996), notes that, a reliability coefficient of 0.5 and above could consistently give comparable results when it is administered to analogous group. Moser and Kalton (1985), are in agreement and observe that when a value of r is higher than 0.5 the instrument is assumed to yield data with high reliability and thus the instrument can be adopted. Therefore, reliability co-efficient of 0.807 obtained in the pilot study, made the researcher to conclude that the instrument was consistent in giving the same responses every time the same instrument was administered. In light of the pilot study, the questionnaire and document analysis, as tools of collecting data, were adopted and used to collect data.

3.10 Data Collection Procedures

The researcher sought authorization from the relevant authorities before collecting data. On receiving a letter from the Dean School of Education, Moi University (appendix 10), the researcher proceeded to the National Commission for Science, Technology and Innovation (NACOSTI) for a research permit and authorization. Upon getting the research permit from NACOSTI (appendix 11 & 12), the researcher then proceeded to the area of study through the Nandi County Director of Education and the Nandi County Commissioner who issued letters of authorization (appendix 13 & 14), allowing the researcher to carry out research in the County. The researcher then personally notified the principals of the sampled secondary school (appendix 1) of the researcher’s intention to carry out a study in their schools. Because of the sensitivity of financial information, the respondents were made aware of the aim of the study and were requested to participate in the study in order to achieve the objectives of the study. The researcher then personally administered the questionnaires to the principals of the secondary schools sampled in
Nandi County in order to obtain information regarding yearly expenditure in the various vote heads, school performance and enrolment. Clarifications were made where required and sufficient time was allowed for the respondents to make their response. The researcher then collected the completed questionnaire from the respondents and those who had not responded were given more time to respond so that their responses could be collected later. This made it easier to get an impressive response rate of 98% of the questionnaires.

3.11 Data Analysis

Data analysis refers to examining what has been collected in a survey, experiment and making deduction and inferences (Kombo & Tromp, 2006). According to Creswell (2013) data analysis is the course of action of systematically searching, arranging scripts, field notes, data and other materials collected from the field so as to code, quantify and then summarize in order to understand and to facilitate the researcher in presenting information to other steps of data analysis. The data collected from the secondary school principals were analyzed based on the objectives of the study. This study deployed the usefulness of the Statistical Package for Social Science (SPSS) version 20. Descriptive and inferential statistics were used to analyze and present results. The analysis of quantitative data collected in this study employed descriptive statistics so as to generate percentages, range and means.

The first and second null hypothesis (HO$_1$ and HO$_2$) was tested using Independent Sample T-test. The independent t-test, also called the two sample t-test, independent-samples t-test or student's t-test, is an inferential statistical test that determines whether
there is a statistically significant difference between the means in two unrelated groups. In this study independent t-test was used to determine if there was significant difference in unit cost of Boarding and Day secondary schools. Independent t-test assumes that there are independent observations, the standard deviation of the dependent variable must be equal in both populations and that the dependent variable must follow a normal distribution. This was true for our data. The third and the fourth null hypothesis (HO₃ and HO₄) was tested using linear regression analysis. Linear regression is a statistical tool of analysis that assesses whether one or more predictor variables explain the dependent (criterion) variable. In linear regression the sample size rule of thumb is that the regression analysis requires at least 20 cases per independent variable in the analysis and that the relationship between the independent and dependent variables to be linear. This was the case in this study. Linear regression was used to determine relationship between unit cost and academic performance. The results of analyses of data was the starting point of the data presentation, interpretation and discussion of the findings. Analysis of data is summarized in the Table 3.2 below.

**Table 3.2 Summary of Data Analysis**

<table>
<thead>
<tr>
<th>Objective</th>
<th>DV</th>
<th>IV</th>
<th>Statistical Tool</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establish Unit Cost</td>
<td>Recurrent cost</td>
<td>Enrolment</td>
<td>Descriptive statistics (mean, range)</td>
</tr>
<tr>
<td>HO₁ and HO₂</td>
<td>Unit cost</td>
<td>School type</td>
<td>Inferential statistics (t-test)</td>
</tr>
<tr>
<td>HO₃ and HO₄</td>
<td>Performance</td>
<td>Unit cost</td>
<td>Inferential statistics (regression analysis)</td>
</tr>
</tbody>
</table>
3.12 Ethical Considerations

Professional researchers of whatever research paradigm have a duty to ensure that they remain people of integrity who will not undertake research for personal gain or do that research which will have negative effects on others (Creswell, 2013). According to Lee (1993), research ethics are guiding principles that lend a hand to reconcile value conflict and researchers need to minimize risks to participants, other researchers and the greater society while attempting to take full advantage of the quality of information they target to produce. In this study, ethical issues were considered before embarking on research; the respondents were made aware that the aim of the study was not an audit of school accounts and that they should feel free to assist the researcher in achieving the objectives of the study. The main purpose of this was to obtain informed consent. All the respondents remained anonymous and confidentiality of the information was assured even up to the level of publication of the findings. The study considered all the respondents equally. Furthermore, the researcher enumerated how privacy and confidentiality concerns would be addressed. Open and unrestricted atmosphere for free exchange of ideas and information were cultivated and sustained. The respondents were given an opportunity to ask for any clarification from the researcher. These issues were the major milestones in this study. The researcher has reported the findings honestly and objectively. All the support received has been acknowledged. Also, the researcher observed research etiquette which includes courtesy and punctuality at the time of data collection and there was no inconvenience caused to the principals and secondary schools attended.
CHAPTER FOUR

DATA PRESENTATION, ANALYSIS, INTERPRETATION AND DISCUSSIONS

4.1 Introduction

This chapter deals with data analysis, presentation, interpretation and discussions of the research findings. The purpose of the study was to analyze the influence of unit cost on learners’ academic performance in the types of secondary school and strategies for effective management of unit cost to enhance academic performance of learners in secondary schools in Nandi County, Kenya. The study specifically sought to; examine unit cost of Day and Boarding secondary schools, examine the academic performance of learners in Day and Boarding secondary schools, to examine the influence of unit cost on academic performance of learners, and to explore strategies for effective management of unit cost to enhance academic performance of learners in secondary schools in Kenya.

The study yielded both qualitative and quantitative data. Data collected was analyzed using both descriptive and inferential statistics. This chapter proceeds by indicating the respondents’ response rate, and making a description of the schools involved in the study; and subsequently makes analysis, presentation, interpretation and discussions of the research findings according to the research objectives. The null hypotheses as stated was also tested and interpreted.

4.2 Demographics

This section provides the response rate and information on important features and characteristics of secondary schools involved in the study. This information which
includes the types of sampled schools and enrolment in these schools forms an insightful understanding of the schools studied.

4.2.1 Respondents Response Rate

This section gives the information of the response rate of the questionnaires administered to the school principal of the sampled secondary schools. This study sampled a total of 123 secondary schools in Nandi County representing 93 Day secondary schools and 30 Boarding secondary schools. Only two school principals did not return the questionnaire. Therefore, out of 123 sampled secondary schools, there were 121 responses representing a remarkable response of 98%.

4.2.2 Types of Sampled Schools

To make a discerning understanding of the schools used for this study, the study analyzed and presented schools according to the sampled school types. The secondary school principals were asked to indicate the type of their schools based on two indicators, Day school or Boarding school. Table 4.1 below shows the types of sampled school in Nandi County.

*Table 4.1: The Types of Sampled School*

<table>
<thead>
<tr>
<th>Type of Sampled School</th>
<th>Frequencies</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boarding Schools</td>
<td>30</td>
<td>24.8</td>
</tr>
<tr>
<td>Day Schools</td>
<td>91</td>
<td>75.2</td>
</tr>
<tr>
<td>Total</td>
<td>121</td>
<td>100</td>
</tr>
</tbody>
</table>
Table 4.1 above shows that majority 91 (75.2\%) of the schools sampled in this study were Day schools. There were thirty Boarding schools representing 24.8\% of the total sampled schools in Nandi County. This findings implies that majority of the schools in the area of study were Day schools. This scenario represents the general picture of secondary schools in Kenya where there are more Sub-County (Day schools).

4.2.3 Enrolment in Secondary Schools

In this study, enrolment in the sampled schools was one of the essential items for analysis; this study analyzed enrolment in terms of school type for the years 2012-2015. The result of this analysis is shown in Table 4.2 below.

Table 4.2; Enrolment Based on the Type of Schools (2012-2015)

<table>
<thead>
<tr>
<th>Type of School</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>Average</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day Schools</td>
<td>12,600</td>
<td>13,878</td>
<td>14,833</td>
<td>16,119</td>
<td>14,356</td>
<td>65.6</td>
</tr>
<tr>
<td>Boarding Schools</td>
<td>4,430</td>
<td>6,569</td>
<td>8,401</td>
<td>10,750</td>
<td>7,538</td>
<td>34.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>17,030</strong></td>
<td><strong>20,447</strong></td>
<td><strong>23,234</strong></td>
<td><strong>26,869</strong></td>
<td><strong>100</strong></td>
<td></td>
</tr>
</tbody>
</table>

From Table 4.2 above, Boarding Schools enrolled a total of 4,430 students in 2012, 6,569 students in 2013, 8,401 student in 2014 and 10,750 students in 2015. Yearly average enrolment stood at 7,538 students this being 34.4 percent of the total enrolment. On the other hand, Day secondary schools enrolled 12,600 students in 2012 and 13,878 learners in 2013. The numbers enrolled in Day schools rose to 14,833 and 16,119 for the years 2014 and 2015 respectively. For Day schools, yearly average enrolment stood at 14,356 this enrolment represented 65.6 percent of the total enrolment. From this it can be
revealed that Day schools enrolled most of the students in each of the four years under study. It can also be established that total enrolment in both school types increased by 57.7 percent from 17,030 students in 2012 to 26,869 students in 2015. This increase in enrolment depicts the national trend where enrolment rose by 33.6 percent between 2012 and 2015 (Republic of Kenya, 2016). Increase in the number of learners, means access is improving. However, this increase has a cost implication to both the state and households demanding education. This is because additional human and physical resources, will be needed in order to provide quality education to the increasing numbers.

Enrolment in schools is useful given the need to have optimal class size which is always an issue of consideration in an attempt to have effective utilization of resource inputs in a school system. The number of learners enrolled in a school, and more so, class size is considered in analyzing efficiency and effectiveness of a school. Hanushek (2007); Kosgei and Rono, (2004); Ngetich et al., (2014) made a recommendation that secondary schools, should always strive to increase enrolment to the optimal level in order to enjoy the economies of scale and thus saving on cost. Hinda (as cited in Geraint, 1993) found out that instructional expenditures per pupil (unit cost) in the primary school sector are related to enrolment. Given that majority of the learners were in Day Schools, effective learning may have been affected. This is because students in Day schools have limited time for study as compared to those in Boarding Schools. Day scholars spend some of their time traveling to and from school. However, majority of the learners might have attended Day Schools because of the cost. Fees charged in Day schools are far much less
compared to those charged in Boarding schools. This is mainly because of the boarding charges.

4.3 Determination of Unit Cost

In order to determine unit cost, variable cost must be identified. In this study, analysis of variable cost for each of the years 2012-2015 are presented in Table 4.3.

**Table 4.3; Yearly Variable Cost for the Period 2012-2015**

<table>
<thead>
<tr>
<th>Type of School</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>Totals</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day Schools</td>
<td>272,223,000</td>
<td>272,813,724</td>
<td>335,151,635</td>
<td>406,102,086</td>
<td>1,286,290,445</td>
<td>321,572,611</td>
</tr>
<tr>
<td>Boarding Schools</td>
<td>214,881,580</td>
<td>306,640,920</td>
<td>495,238,950</td>
<td>700,652,750</td>
<td>1,717,414,200</td>
<td>429,353,550</td>
</tr>
<tr>
<td>Total</td>
<td>487,104,580</td>
<td>579,454,644</td>
<td>830,390,585</td>
<td>1,106,754,836</td>
<td>3,003,704,645</td>
<td></td>
</tr>
</tbody>
</table>

From Table 4.3 above, it can be revealed that, Day schools spent Ksh. 272 million in the year 2012 rising to Ksh. 406 million in 2015. Day schools spent a total of Ksh.1.2 billion for the four year period (2012-2015), giving a yearly average expenditure of Ksh. 321 million. On the other hand, Boarding secondary schools spent Ksh. 214 million in the year 2012, rising to Ksh. 700 million in 2015. Boarding schools spent a total of Ksh.1.7 billion for the four year period, giving a yearly average expenditure of Ksh. 429 million.

In total, considering the two types of schools, total expenditure rose by 127 percent from ksh. 487 million in 2012 to Ksh.1.1 billion in 2015. Although the total expenditure by Boarding schools was higher in all the years, enrolment in Day schools was higher than those in Boarding school for all the years 2012-2015. Analysis of variable cost is in line with the study by KIPPRA (2006) which aptly puts that, in an attempt to establish unit
cost, analysis of recurrent expenditure (variable cost) and enrolment is important. Because of that, the first objective of this study was to examine unit cost of the types of secondary schools. This section, therefore, identifies variable cost (yearly expenditure) and taking into consideration student enrolment, establishes unit cost for the various school types. Table 4.4 below, analyses unit cost for the period 2012-2015 in the two types of schools. 

*Table 4.4; Unit Cost for the Two Types of Schools for the period 2012-2015.*

<table>
<thead>
<tr>
<th>Type of School</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day Schools</td>
<td>21,605</td>
<td>19,658</td>
<td>22,595</td>
<td>25,194</td>
<td>22,263</td>
</tr>
<tr>
<td>Boarding Schools</td>
<td>48,506</td>
<td>46,680</td>
<td>58,950</td>
<td>65,177</td>
<td>54,828</td>
</tr>
</tbody>
</table>

Table 4.4 shows a summary of the findings of unit cost for the sampled schools for the period 2012-2015. From the Table, it can be revealed that unit cost for Day schools stood at Ksh. 21,605 in 2012, Ksh. 19,658 in 2013, Ksh. 22,595 in 2014 and Ksh.25,194 in 2015, giving an average unit cost of Ksh. 22,263. This was the amount which was spent on average by the Day schools in the period 2012-2015 to provide education for each student. Furthermore, the study determined unit cost for boarding secondary schools sampled for the study. In Boarding school, unit cost was Ksh. 48,506 and Ksh. 46,680 for the years 2012 and 2013 respectively. Unit cost further increased from Ksh. 58,950 in 2014 to Ksh. 65,177 in 2015. Therefore, average unit cost for Boarding schools for the period 2012-2015 stood at Ksh.54,828. Boarding schools spent the highest cost per student per year for the entire period of 2012-2015.
Furthermore, analysis of average unit cost, highest unit cost and lowest unit cost was done. The findings are as shown in Table 4.5.

**Table 4.5; Average, Highest and Lowest Unit Cost**

<table>
<thead>
<tr>
<th>Type of School</th>
<th>Average Unit Cost</th>
<th>Highest Unit Cost</th>
<th>Lowest Unit cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day Schools</td>
<td>22,263</td>
<td>37,593</td>
<td>17,410</td>
</tr>
<tr>
<td>Boarding Schools</td>
<td>54,828</td>
<td>96,400</td>
<td>50,234</td>
</tr>
</tbody>
</table>

The result in Table 4.5 shows that, on average, unit cost for Boarding schools was Ksh. 54,828. In this type of school, the highest unit cost recorded was Ksh. 96,400 and the lowest unit cost was Ksh. 50,234. On the other hand, Day secondary schools had average unit cost at Ksh. 22,263, while the highest unit cost recorded was Ksh. 37,593 and the lowest unit cost was Ksh. 17,410. The findings points out that, there was a big disparities in Unit Cost in the years 2012-2015 across and between the two types of schools. The range between the highest unit cost and the lowest unit cost for Boarding schools was 46,166, while that of Day schools stood at 20,183. This shows that both Day secondary schools and Boarding secondary schools spent different amounts per student for the period of study. Thus, with the highest unit cost at Ksh 96,400 and the lowest unit cost at Ksh 17,410, it can be established that there was a huge range between a school which spent on average the highest cost per student and the one which spent the lowest cost per student. This shows a wide difference in cost per student per year (unit cost) even for schools of the same type in the same geographical locality. Schools which are of the same type and in the same geographical locality, should ideally spend relatively the same
amount per student per year (unit cost). In a situation where there is disparity in unit cost, the amount should not be such huge and alarming.

The findings of this study on the question of unit cost in the different types of secondary schools show that, whereas unit cost within the same type of school vary, learners in Boarding schools spent more than those in Day schools. The major cost component being the cost of boarding; thus the study agrees with Lewin (2006) who noted that the two largest cost components in most secondary school systems in sub Saharan Africa are cost of boarding and cost of teachers’ salaries. This study also agrees with the findings of a study by Munda and Odebero (2014) who established that, there were disparities in costs of education both within and between the two categories of County and District schools. In their study, it was found out that the average per student direct unit cost for County schools was almost twofold that of District schools. The same observation is made by Odden and Clune (1995) who in their study on Improving Educational Productivity and School Finance noted that, different levels of cost per student in different school types are issues of concern; this is principally because unit cost is a result of total variable cost and enrolment and at the same time total cost is linked to availability of resource inputs in the schools. School resource inputs on the other hand, determine quality of teaching which is reflected in the national examinations. The fundamental question arises, how do schools finance their operations to a point of such huge disparity? Do schools spending less perform in the national examinations? And what is their performance? Policy implication in financing of education by the government has been to improve access while
maintaining quality. The direction we need to take, therefore, is to minimize cost of secondary education, but not to the extent of compromising quality of education.

4.3.1 Comparison of Unit Cost and Government Fees Guidelines in the School Types.

This study found it necessary to compare unit cost in the school types with the fee guidelines issued by the government through MoEST. The result of this analysis is tabulated in Table 4.6 that follows.

Table 4.6; Unit Cost and Government Fee Guidelines in the School Types

<table>
<thead>
<tr>
<th>School Type</th>
<th>Average Unit Cost</th>
<th>Government Fees Limit</th>
<th>Number of Schools Beyond the Limit</th>
<th>Number of Schools Within the Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boarding</td>
<td>54,828</td>
<td>66,424</td>
<td>9 (30%)</td>
<td>21 (70%)</td>
</tr>
<tr>
<td>Day</td>
<td>22,263</td>
<td>22,244</td>
<td>69 (76%)</td>
<td>22 (24%)</td>
</tr>
</tbody>
</table>

Table 4.6 above shows schools grouped under Day schools or Boarding schools. It can be revealed that the government limit for all Boarding schools was set at Ksh.66,424 and at Ksh.22,244 for Day schools. From the findings of this study, Boarding schools spent on average Ksh. 54,828 per student (unit cost). Majority 21 (70%) of the Boarding schools spent within the set fees limit while a small number 9 (30%) of the Boarding school spent beyond the limit. However, the average unit cost is less than the limit set by the
government for Boarding secondary schools. Day schools spent on average Ksh.22,263 per student. Considering the government fees limit for this type of school was set at Ksh.22,244, it was established that majority 69 (76%) of the Day schools in this study spent beyond the government fees limit while only 22 (24%) spent within the set limit.

Given the high number of Day schools spending beyond the set limit in the fee guidelines, it can be argued that the idea of fee guidelines for Day schools needs to be re-evaluated. It is also apparent that all schools have introduced a vote head on meals in Day schools. This makes it necessary to have a guideline which shows how much to be charged on meals and other related items in Day secondary schools.

Over expenditure and under expenditure in secondary schools raises fundamental question of how finances were being utilized. The introduction of other levies against the requirements of issued fee guidelines by the MoEST raises a question on the effectiveness of this fee guidelines. According to the MoEST (2015), some of the key recommendations of Kilemi Mwiria’s report on secondary school fees in Kenya, were expected to be implemented to alleviate financial burden on the part of the parents, as well as, improving participation in secondary school due to increased enrolment at the primary level of education. While Chisumi (2012), noted that increased cost of education has lead most developing countries to explore cost effective measures, such as, fee guidelines to be followed by secondary schools, there is different observations among stakeholders on the concrete cost of education for secondary schools. Earlier Masese (2005), noted that, even with huge government allocation for secondary education,
secondary schools are finding it difficult to meet expenditure of some vote heads such as personal emoluments; because of this, public secondary schools have been raising more funds through the PTA vote head to top up those vote heads whose allocation proved insufficient (Kirungu, 2005). This could therefore explain why according to this study, some schools spent way beyond the limit while others introduced additional areas of spending such as development, academic improvements, PTA.

Although some schools spent less than the allocated amount, most of the secondary schools spent more than the allocated amount. This may be attributed to the findings of Shikanda, Odebero and Byaruhanga (2013), who observed that, the current budget estimates in public secondary schools were the lowest, taking into account the constant increase in prices of goods and services with an effect of putting pressure on secondary school budget estimates. The situation is even made worse by the erratic disbursement of this funding besides not being adequate to sustain the targeted vote head areas, such as, laboratory equipment, tuition fees and stationary, teaching materials, continuous examinations, electricity, water, conservancies and students’ activities.

4.3.2 Testing the Hypothesis (HO1)

In addition to the descriptive statistics in the analysis of unit cost of Day schools and Unit Cost of Boarding schools, this study sought to establish whether there was a significant difference in unit cost between Boarding secondary schools and Day secondary schools in Nandi County. Data was collected from 30 Boarding secondary schools and 91 Day secondary schools in the County. School type was measured in nominal scale as either
“Boarding” or “Day”. School type responses were coded for purposes of categorization as Boarding-1 and Day-2. This was necessary so that the responses could be entered in the SPSS for analysis. Unit cost was measured in ratio scale and in Kenya Shillings. To achieve this objective, an hypothesis was formulated as:

\[ \text{HO}_1: \] There is no statistically significant difference in unit cost of Boarding secondary schools and unit cost of Day secondary schools.

To test this hypothesis, the researcher used Independent Samples T-test. Independent Samples T-test means that there are two groups, and we are comparing the means of the two groups. The t-test for the difference in means is an hypothesis test that tests the null hypothesis that the means for both groups are equal, versus the alternative hypothesis that the means are not equal (2-tail) or that the mean for one of the groups is larger than the mean for the other group (1-tail). This test was appropriate for this hypothesis since the concern was comparing the means in unit cost of Boarding secondary schools and unit cost of Day secondary schools in Nandi County. The results are presented in Table 4.7.

**Table 4.7; Independent Samples Test for Testing HO\(_1\)**

<table>
<thead>
<tr>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>Sig.</td>
</tr>
<tr>
<td>---</td>
<td>-----</td>
</tr>
<tr>
<td>Equal variances assumed</td>
<td>20.456</td>
</tr>
<tr>
<td>Equal variances not assumed</td>
<td>21.291</td>
</tr>
</tbody>
</table>
The output in Table 4.7 shows that, unit cost was normally distributed for both groups and that there was homogeneity of variance as assessed by Levene's Test for Equality of Variances. After running the independent t-test on the data with a 95% confidence interval for the mean difference, it was found that, there was a significant difference in unit cost between Boarding and Day secondary schools in Nandi County ($t(121) = 31.516, p = 0.000$). Therefore, the null hypothesis was rejected since the p-value was less than the significance level of 0.05. This implies that the unit cost was different among Boarding and Day secondary schools where the study was done. As earlier presented using descriptive statistics, the unit cost for Boarding schools was Ksh. 54,828 while the unit cost for day schools was Ksh. 22,263. This shows that the unit cost for Boarding schools was higher than unit cost for Day schools. As discussed earlier, cost of boarding is substantial and contributes to differences. This may be the reason why there have been a number of efforts to encourage the growth of Day schools as a way of increasing participation in secondary education and reducing cost of secondary education to be shouldered by parents (MoEST, 2005; TSC, 2007). More drastic measures were suggested by IPAR (2007) which recommends the abolition of public Boarding secondary schools in Kenya. This is part of the cost reduction strategy aimed at improving access, quality education and effective retention of learners in school and, above all, improve learner outcomes. Such a strategy is supported by the findings of this study that; unit cost for Boarding schools was higher than unit cost for Day schools. However, the question of performance comes into play; are learners in Boarding schools better performers than those in Day school. The next sub section analyses performance in the Kenya Certificate of Secondary Education (KCSE) in the period 2012-2015.

The second objective of this study was to examine the academic performance of learners in the types of secondary schools in Nandi County, Kenya. Academic performance is measured by the grades attained at the KCSE examinations which are done after four years of secondary education. Secondary school principals in Nandi County were asked to indicate the performance (mean score) in their schools for the period 2012 to 2015 at the KCSE examination. In addition, document analysis on the performance at the KCSE was done. The findings are presented in four sub sections that follow.

4.4.1 Analysis of KCSE Performance for the School Types (2012-2015)

In this study, analysis of the performance at the KCSE according to the schools type where learners sat their KCSE examinations for the years 2012-2015. Learners were considered in the following types of schools; Day School or Boarding School. Table 4.8 below shows the results of this analysis.

Table 4.8; Summary Analysis of KCSE Performance for the School Types (2012-2015)

<table>
<thead>
<tr>
<th>Schools type</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boarding schools</td>
<td>6.9874</td>
<td>6.8956</td>
<td>7.1548</td>
<td>7.4358</td>
<td>7.1184</td>
</tr>
<tr>
<td>Day schools</td>
<td>4.8153</td>
<td>4.6334</td>
<td>4.9612</td>
<td>4.5464</td>
<td>4.7391</td>
</tr>
</tbody>
</table>

From Table 4.8, Boarding secondary schools sampled for the study recorded a mean score of 6.9874 in the year 2012, 6.8956 in the year 2013, 7.1548 for the year 2014 and 7.4358 in the year 2015. Day secondary schools recorded a mean score of 4.8153, 4.6334,
4.9612 and 4.5464 for the year 2012, 2013, 2014 and 2015 respectively. The average for the four years was a mean of 7.1184 for Boarding secondary schools and 4.7391 for Day secondary schools. It is important to note that, for all the years, it can be established that Boarding secondary schools performed better than Day secondary schools. Furthermore, the highest mean that was attained in the four years was 7.4358 for Boarding secondary schools and 4.9612 for Day secondary schools.

The lowest mean scored in the four years was 6.8956 for Boarding secondary schools and 4.5464 for Day secondary schools. Given that the possible attainable mean score stands at 12, which is a grade ‘A’, Boarding secondary schools perform at a mean grade of C plus for the entire four year period (2012-2015). On the other hand, for the same period, Day secondary schools performance was at just at grades C and C minus. These performances therefore, had not been improving for the four year period. Education stakeholders, more so, those who finance education, have an interest in improving results because that is the best way they can get returns on their investment.

### 4.4.2 Performance in the KCSE in Nandi County (2015)

In this sub section the performance in the County at the KCSE in 2015 has been analyzed. The finding is tabulated in Table 4.9.
Table 4.9: Performance in the KCSE in Nandi County (2015)

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points</th>
<th>Entry(2015)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>12</td>
<td>121</td>
</tr>
<tr>
<td>A-</td>
<td>11</td>
<td>394</td>
</tr>
<tr>
<td>B+</td>
<td>10</td>
<td>535</td>
</tr>
<tr>
<td>B</td>
<td>9</td>
<td>890</td>
</tr>
<tr>
<td>B-</td>
<td>8</td>
<td>1,206</td>
</tr>
<tr>
<td>C+</td>
<td>7</td>
<td>1,330</td>
</tr>
<tr>
<td>C</td>
<td>6</td>
<td>1,414</td>
</tr>
<tr>
<td>C-</td>
<td>5</td>
<td>1,395</td>
</tr>
<tr>
<td>D+</td>
<td>4</td>
<td>1,336</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>1,057</td>
</tr>
<tr>
<td>D-</td>
<td>2</td>
<td>298</td>
</tr>
<tr>
<td>E</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>C</td>
<td>6.2782</td>
<td>9,984</td>
</tr>
</tbody>
</table>

Table 4.9 above shows that, the County had an entry of nine thousand nine hundred and eighty four (9,984) form four KCSE candidates in the year 2015. At the KCSE level learners could attain grades ranging from grade ‘A’ with twelve points to grades ‘E’ of one point. The county had a mean grade of C that is a mean score of 6.2782 in the year 2015, this was a positive improvement of 0.155 compared to the 2014 KCSE results. Table 4.9 further indicates that in the year 2015, a total of 121 learners scored grade A, 394 scored grade A- while 535 scored grade B+. Another 890 candidates scored grade B while 1,206 candidates scored B-. In total, a total of 4,476 learners scored grades between A and C+, this represented 43.5% of the entry in the year 2015. Students who scores grades C+ and above are eligible to proceed for university education, with majority of them securing government financial support for their studies at the university. On the other hand, a total of 5,500 candidates scored a mean grade of between grades C and D-. Only 8 students scored grade E in the year 2015. Student scoring between C and
D- are expected to join various technical and vocational centers for diploma, certificate, craft or artisan courses.

Furthermore, this study made analysis of the performance at the KCSE for the two types of secondary schools for the year 2015, by comparing average mean score, highest mean score and lowest mean score. The findings are tabulated in Table 4.10

**Table 4.10; Analysis of Performance for the School Types (KCSE 2015)**

<table>
<thead>
<tr>
<th>School type</th>
<th>Entry</th>
<th>Average</th>
<th>Highest</th>
<th>Lowest</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Entry</td>
<td>Means</td>
<td>Mean</td>
<td>Mean</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Score</td>
<td>Score</td>
<td>Score</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boarding schools</td>
<td>2,824 (43%)</td>
<td>7.4358</td>
<td>11.162</td>
<td>4.040</td>
<td>7</td>
</tr>
<tr>
<td>Day schools</td>
<td>3,705 (57%)</td>
<td>4.5464</td>
<td>8.045</td>
<td>2.559</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 4.10 above shows a result of analysis for the 2015 KCSE performance in the sampled Day and Boarding secondary schools. From the Table, it is revealed that Boarding Schools which registered 2,824 KCSE candidates in 2015 this being 43 percent of the total candidature, attained an average mean score of 7.4358. The highest mean score for Boarding Schools was at 11.162 and the lowest mean was at 4.040. The range in this type of school was wide at 7 points. On the other hand, Day Schools entered 3,705 candidates which represented 57 percent of the total candidates in 2015. Day Schools had an average mean score of 4.5464 while the highest mean score and the lowest mean score were 8.045 and 2.559 respectively giving a range of 5 points.
From the finding, Day Schools had a lower average mean score compared to the average mean score of Boarding Schools, the difference between average mean score for Day Schools and Boarding Schools stood at 3 points. Although allocation per student under the government subsidy for secondary education is the same for both Day schools and Boarding Schools, learners in Boarding Schools pay additional funds mainly for their boarding expenses. Learners in Boarding Schools have reasonably enough time to study as compared to those in Day Schools who consume some of the valuable time travelling to and from school. Day School registered the highest number of candidates as compared to the Boarding Schools. Based on the average mean score, Boarding Schools performed better than Day Schools, but the range stood at about 1 point when we consider the lowest mean score between the two types of schools. This means the lowest performing schools in the two types of schools have relatively the same performance. However, day scholars pay far much less in terms of school fees compared to boarders.

4.4.3 Testing the Hypothesis (HO₂)

In addition to the descriptive statistics on the analysis of students’ academic performance for Day schools and students’ academic performance for Boarding schools, this study sought to establish whether there was a significant difference in academic performance between Boarding secondary schools and Day secondary schools in the area where the study was done. Students’ academic performance was measured in ratio scale where the student’s average mean scores obtained in examination were used. The minimum score was 1 and the highest score was 12 as used by the Kenya National Examination Council (KNEC). The second hypothesis of this study was therefore stated as:
**HO\textsubscript{2}:** There is no statistically significant difference in academic performance of learners in Boarding secondary schools and academic performance of learners in Day secondary schools.

The hypothesis was tested using Independent Samples T-test. This test was appropriate for this hypothesis because the sampling method was systematic random sampling, the samples were independent and that there was homogeneity of variance. The output is presented in Table 4.11.

**Table 4.11; Independent Samples Test for Testing HO\textsubscript{2}**

<table>
<thead>
<tr>
<th>Perform ance</th>
<th>Levene’s Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equal variances assumed</td>
<td>F 8.889 Sig. .003</td>
<td>t 9.990 df 121 Sig. (2-tailed) .000</td>
</tr>
<tr>
<td>Equal variances not assumed</td>
<td>F 8.160 Sig. .000</td>
<td>t 37.641 df .000</td>
</tr>
</tbody>
</table>

The output shown in Table 4.11 reveals that the level of academic performance was normally distributed for both groups and that there was homogeneity of variance as assessed by Levene's Test for Equality of Variances. After running the independent t-test on the data with a 95% confidence interval for the mean difference, it was found that there was a significant difference in academic performance between Boarding schools.
and Day schools \((t(121) = 9.990, p = 0.000)\). Therefore, the null hypothesis was rejected since the p-value was less than the significance level of 0.05. This implies that academic performance was different in Boarding schools and Day schools where the study was done.

### 4.4.4 Principals’ Level of Satisfaction with KCSE Results

The principals were further asked to indicate their level of satisfaction with the KCSE result given financial resource input by the school. The result of this finding is shown in Table 4.12 below.

#### Table 4.12; Principals Level of Satisfaction with KCSE Results

<table>
<thead>
<tr>
<th>Level of Satisfaction</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not satisfactory</td>
<td>54</td>
<td>44.9</td>
</tr>
<tr>
<td>Undecided</td>
<td>43</td>
<td>35.4</td>
</tr>
<tr>
<td>Satisfactory</td>
<td>24</td>
<td>19.7</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>121</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

N = 121

From Table 4.12 above, majority (54) representing 44.9% of the secondary school principals in Nandi County, indicated that they were not satisfied with the performance at the KCSE level in the period 2012-2015. It is also revealed in Table 4.12 that forty three (35.4%) of the secondary school principals in Nandi County, were undecided when they were asked to indicate their level of satisfaction with the KCSE results for the period 2012-2015, taking into consideration the financial resource inputs during this period. However, twenty four (20%) of the secondary school principals felt that the KCSE results
for the years 2012 to 2015 were satisfactory given the financial resource input during the period. They suggested that it would have been even better if additional resource were available.

From the findings, academic performance of learners in Boarding schools is different from academic performance of learners in Day schools and that performance of learners in Boarding schools was better than those in Day schools. These findings are in agreement with Yeya (2002), who noted that students in Boarding schools clear the syllabus on time, and therefore, get more time for remedial classes and serious revision because they are continually in school as compared to day scholars. Day schools are always affected by absenteeism of both their teachers and the learners; at the end of it all this absenteeism affects the completion of the required content in the syllabus in a particular year and eventually this is reflected in the academic performance. Yeya (2002) further noted that students with remarkable marks at the end of their primary cycle keep away from Day schools in preference to Boarding schools. This could then be the reason for better performance in Boarding schools in national examinations. It is also not lost that all National, Extra County and County schools are Boarding school. Furthermore, given that entry behaviour of learners in Boarding schools (based on the KCPE marks) are better than those joining Sub-County school which are the Day schools. Yara and Catherine (2011) also found out that school category was to be significant and can be used to predict students’ performance in mathematics. Munda and Odebero (2014) are of the same views and observe that, given that, better funding in many ways, affect the quantity and quality of educational resources which schools acquire. The disparities
between County and District schools could explain the better students’ performance in County schools.

4.5 The influence of Unit Cost on Academic Performance of Learners in the Types of Secondary Schools.

The third objective of this study was to examine the influence of unit cost on academic performance of learners in the types of secondary schools in Nandi County, Kenya. The findings on this objective are presented in two sub-sections that follow. The first sub-section tests the two hypotheses (HO$_3$ and HO$_4$) which was formulated. The second sub-section gives the result of principals’ perceived link between unit cost and KCSE performance.

4.5.1 Testing the Hypotheses (HO$_3$ and HO$_4$)

It was the concern of this study to determine the relationship between unit cost and academic performance of learners in Boarding secondary schools in Nandi County. Therefore, the third hypothesis was stated as:

**HO$_3$**: There is no statistically significant relationship between unit cost and academic performance of learners in Boarding secondary schools in Nandi County.

This third hypothesis was tested using linear regression analysis. Using a computer programme (SPSS version 20), a linear regression analysis involving unit cost and academic performance was used to determine the actual prediction equation and show the direction, collinearity and strength of the relationship among the variables. All the
variables had items that were measured in ratio scale. To undertake linear regression analysis, the responses in each variable were transformed into composite means using SPSS version 20 before generating the regression output. The components of the linear regression analysis used in this study are the Model Summary, the ANOVA Summary and the Table of Coefficients.

Table 4.13 presents the coefficients used in the linear regression equation, the t-statistics and the p-values derived after running the regression analysis using SPSS. This is where the actual prediction equation can be found. The regression equation used in this study was:

\[ Y = \beta_0 + \beta_1 X_1 \]

Where \( X_1 \) is unit cost,

\( Y \) is level of academic performance

\( \beta_0 \) is a constant implying the level of academic performance that does not depend on unit cost.

\( \beta_1 \) is the coefficient of proportionality for unit cost for Boarding schools

**Table 4.13 Linear Regression of Academic Performance on Unit Cost for Boarding Schools**

**Table 4.13 (a) Model Summary**

<table>
<thead>
<tr>
<th>Mode</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of Estimate</th>
<th>Change Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>R Square Change</td>
</tr>
<tr>
<td>1</td>
<td>.621*</td>
<td>.386</td>
<td>.364</td>
<td>1.447149</td>
<td>.386</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>F Change</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>df1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>df2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sig. F Change</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), unit cost
Table 4.13 (b) ANOVA<sup>a,b</sup>

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>36.803</td>
<td>1</td>
<td>36.803</td>
<td>17.573</td>
<td>.000&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Residual</td>
<td>58.639</td>
<td>28</td>
<td>2.094</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>95.441</td>
<td>29</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> Dependent Variable: performance  
<sup>b</sup> Selecting only cases for which school type = boarding  
<sup>c</sup> Predictors: (Constant), unit cost

Table 4.13 (c) Coefficients<sup>a,b</sup>

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>-.040</td>
<td>1.803</td>
<td>-.022</td>
<td>.983</td>
</tr>
<tr>
<td>1</td>
<td>unit cost</td>
<td>.621</td>
<td>.621</td>
<td>4.192</td>
</tr>
</tbody>
</table>

<sup>a</sup> Dependent Variable: performance  
<sup>b</sup> Selecting only cases for which school type = boarding

In Table 4.13(a), R<sup>2</sup> was 0.386. R<sup>2</sup> is the coefficient of determination which shows the proportion of the variance in the dependent variable that can be explained by variation in the independent variables. Therefore 38.6% in the variation in academic performance can be explained by differences in the unit cost. The remaining 61.4% variation in the level of academic performance, can be explained by other variables not covered in this study.

Table 4.13(b) shows an F-ratio of 17.573 with degrees of freedom of 1 and 28, p=0.000(p<0.05). In other words, the dependent variable (performance) can be predicted from the independent variable (unit cost). This implies that there was a significant regression equation at 0.05 significance level.
Table 4.13(c) shows the coefficients used in the linear regression equation. Substituting the coefficients in the linear regression equation, we get:

\[ Y = -0.040 + 0.621X_1 \]

This implies that there was a positive significant \((p=0.000)\) relationship between academic performance and unit cost in Boarding secondary schools where the study was done, \(t(28) = 4.192, p<0.05\). This shows that 62.1% of the change in the level of academic performance is due to unit cost.

Similarly, the study sought to determine the relationship between unit cost and academic performance of learners in Day secondary schools in Nandi County. Therefore the fourth hypothesis was stated as:

\[ \text{HO}_4: \text{There is no statistically significant relationship between unit cost and academic performance of learners in Day secondary schools in Nandi County.} \]

This fourth hypothesis was also tested using linear regression analysis. The components of the linear regression analysis used in this study are the Model Summary, the ANOVA Summary and the Table of Coefficients.

Table 4.14 presents the coefficients used in the linear regression equation, the t-statistics and the p-values derived after running the regression analysis using SPSS. This is where the actual prediction equation can be found. The regression equation used in this study was;

\[ Y_1 = \beta_2 + \beta_3X_2 \]

Where \(X_2\) is unit cost,

\[ Y_1 \text{ is level of academic performance} \]
B₂ is a constant implying the level of academic performance that does not depend on unit cost.

β₃ is the coefficient of proportionality for unit cost for Day schools.

**Table 4.14; Linear Regression of Academic Performance on Unit Cost for Day Schools**

**Table 4.14(a) Model Summary**

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Change Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>.254*</td>
<td>.064</td>
<td>.054</td>
<td>1.174542</td>
<td>.064</td>
</tr>
</tbody>
</table>

*a. Predictors: (Constant), unit cost*

**Table 4.14(b) ANOVA**

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>8.640</td>
<td>1</td>
<td>8.640</td>
<td>6.263</td>
<td>.014*</td>
</tr>
<tr>
<td>Residual</td>
<td>125.539</td>
<td>91</td>
<td>1.380</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>134.178</td>
<td>92</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*a. Dependent Variable: performance  
b. Selecting only cases for which school type = day  
c. Predictors: (Constant), unit cost*

**Table 4.14(c) Coefficients**

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Constant)</td>
<td>2.533</td>
<td>.814</td>
<td>3.112</td>
</tr>
<tr>
<td>1</td>
<td>unit cost</td>
<td>.254</td>
<td>.254</td>
<td>.254</td>
</tr>
</tbody>
</table>

*a. Dependent Variable: performance  
b. Selecting only cases for which school type = day*
In Table 4.14 (a), $R^2$ was 0.064. This shows that 6.4% in the variation in academic performance can be explained by differences in the unit cost. The remaining 93.6% variation in the level of academic performance can be explained by other variables not covered in this study. Table 4.14(b) shows an F-ratio of 6.263 with degrees of freedom of 1 and 91, $p=0.014 (p<0.05)$. In other words, the dependent variable can be predicted from the independent variable. This implies that there was a significant regression equation at 0.05 significance level.

Table 4.14(c) shows the coefficients used in the linear regression equation. Substituting the coefficients in the linear regression equation, we get:

$$Y_1 = 2.533 + 0.254X_2$$

This implies that there was a positive significant ($p=0.014$) relationship between academic performance and unit cost in Day secondary schools where the study was done, $t(91) = 2.503$, $p<0.05$. This shows that 25.4% of the change in the level of academic performance is due to unit cost.

The findings from the hypothesis tested indicates that, there was a positive significant ($p=0.014$) relationship between academic performance and unit cost in Day secondary schools. The implication is that 25.4% of the change in the level of academic performance in Day secondary schools, is due to unit cost. For Boarding secondary schools, there was also a positive significant ($p=0.000$) relationship between academic performance and unit cost. This means, in Boarding secondary schools, 62.1% of the change in the level of academic performance, is due to unit cost.
These findings are in agreement with those found in a study by Munda and Odebero (2014) which was aimed at determining how costs relate to the academic performance in District and County schools. Munda and Odebero (2014), found out that the unit cost disparities between County and District schools could explain the better students’ performance in County schools. The findings of this study are also supported by a World Bank Report (as cited in Ayodele, 2012) which pointed out that one reason for the low quality of education in Africa is that expenditure per student (unit cost) is very low by world standards. CIDA (2002) agrees to that and notes that, inadequate financial resources are often seen as the origin of poor quality education, limited access and retention. Although Hanushek (1989), in his study on The Impact of Differential Expenditures on School Academic Performance, found out that no systematic positive relationship between student achievement and per-pupil expenditures (unit cost). However, Hanushek’s findings were challenged by Hedges, Laine and Greenwald (1994), in their study on Meta-Analysis of the Effects of Differential School Inputs on Student Outcomes. They reanalyzed Hanushek’s work and they discovered that an increase in average spending per pupil (unit cost) would significantly increase student achievement. Correspondingly, Crampton (1995) noted that expenditures give the impression to be of substance when they lead to ability to acquire smaller classes and more experienced, highly educated teachers.

However, the findings of this study are not supported by other studies. Hanushek (1981) found out that there is no significant relationship between school expenditure and students’ academic achievement. A study by Sika, Gravenir and Riechi (2013) on the
impact of unit cost on academic performance of public secondary education in Siaya, Kenya, also concluded that an increase in unit cost may not lead to increase in performance. They caution that allocating more resources in the schooling process as a way of improving achievement need to be done with a lot of prudence. Furthermore, in Nigeria a study by Ayodele (2012) on the relationship between private cost and students’ academic performance in secondary schools found out that, there was no significant relationship between private unit cost per student of secondary education and students’ academic performance in secondary schools in the State. Ekanem and Ekpiken (2013) in their study found out that unit cost of both academic and non academic staff could not establish the extent of students’ academic attainment. However, Picus (1995), noted that inputs to learning outcomes usually include per-pupil expenditures (unit cost) while Hanushek (2007) emphasize that this inputs have a constructive effect on student achievements.

4.5.2 Principals’ Perceived Link between Unit Cost and KCSE Performance

This study sought opinion of the school principals in Nandi County on whether the scores attained at the KCSE examination in their schools can be attributed to the cost of educating the learners. Result on this issue is presented in figure 4.1 below.
Figure 4.1; Principals’ Perceived Link between Cost and KCSE Performance.

From figure 4.1 above, it can be revealed that although three (2.5%) of the secondary school principals did not respond to this question, majority seventy one (57.7%) of the secondary school principals in the County, were in agreement that the scores attained at the KCSE examinations, can be attributed to the cost of education. They felt that their performance would have even been far much better if they had been given more resources to facilitate learning. This, therefore, implies, according to them, grades attained at the KCSE examination, can be accredited to the cost of educating the learners. Consequently, they are in agreement with Sigilai (2013) who noted that students’ academic performance cannot be accomplished where there is shortage of the required inputs in the teaching and learning process. To acquire adequate inputs, financial implication is real. But World Bank (2008), differs with this sentiment and makes observation that quality of education depends a great deal on how schools are managed and not on the abundance of resources.
Interestingly, thirty one (25.2%) of the school principals said that they did not know whether the grades attained by their schools could be attributed to the cost of education. They observed that there are other factors which might have played a role with regard to the learners’ achievements. These principals cited learners’ entry behaviour, teacher student ratio, teacher and learners’ attitude, learners’ social and economic background. Their observation supports the views of a number of scholars. Irungu et al., (2013) notes that, poor performance in the national examination, may be due to disregarding the concept of entry behaviour. Finn and Achilles (1999) find a positive relationship between class size and students’ academic achievement. Yara and Catherine (2011) found out that there is a positive correlation between academic performance in mathematics and students’ attitude towards mathematics.

A smaller group of 18 (14.6%) of the school principals were clear that, the scores attained in their schools could not be attributed to the cost of educating the learners. According to them, sound and efficient school leadership, continuous teacher and student motivation, developing culture of hard work, effective involvement of parents in the destiny of their children and fruitful sharing of information with all the stakeholders, are major contributors to better performance in examinations. The finding that the scores attained in secondary schools, could not be solely attributed to the cost of educating the learners, agrees with Ohba (2009), who noted that academic performance at the national examinations, can be attributed to a variety of factors which include neighborhood interferences, inappropriate teaching methodologies and poor management of the little available school resources. Furthermore, Kuziemko (2006) found out that, the benefit of
smaller schools prevails over the cost. While Rivkin et al., (2005), stresses the significance of teacher effectiveness in determining the performance of a school.

### 4.6 Managing Unit Cost in Secondary Education

The fourth objective of this study was to explore strategies for effective management of unit cost to enhance academic performance of learners in secondary schools in Nandi County, Kenya. The findings are presented in two sub-sections that follow.

#### 4.6.1 Affordability of Unit Cost in Secondary Schools

This study sought opinion of the secondary school principals in Nandi County on the question of affordability of secondary education. They were presented with four statements pointing at the affordability of cost of educating one student in one year (unit cost). The responses to this question are presented in Table 4.15 below.

**Table 4.15 Affordability of Unit Cost in Secondary Schools**

<table>
<thead>
<tr>
<th>Statement on Unit Cost</th>
<th>Agree</th>
<th>Not sure</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( f )</td>
<td>( % )</td>
<td>( f )</td>
</tr>
<tr>
<td>Cost incurred per student per year is High</td>
<td>6 (5)</td>
<td>20 (16)</td>
<td>97 (79)</td>
</tr>
<tr>
<td>Cost incurred per student per year is Affordable</td>
<td>117 (95)</td>
<td>4 (3)</td>
<td>2 (2)</td>
</tr>
<tr>
<td>Cost incurred per student per year can be Reduced</td>
<td>13 (11)</td>
<td>56 (46)</td>
<td>54 (44)</td>
</tr>
<tr>
<td>Cost incurred per student per year can be Increased</td>
<td>42 (34)</td>
<td>38 (31)</td>
<td>43 (35)</td>
</tr>
</tbody>
</table>

\( N = 121 \)
It can be revealed by the analysis in Table 4.15 above that majority 97 (79%) of the secondary school principals disagreed with the statement that cost incurred per student per year (unit cost) was high. While only 6(5%) of the principals agreed that, unit cost was high, twenty (16.3%) of the principals indicated that they were not sure this was the case. On the statement that, cost incurred for each student in a year (unit cost) was affordable, majority 117 (95%) of the principals agreed with the statement. However, a small number 4 (3%) of the principals, were not sure whether the unit cost was affordable. Only 2 (2%) of the principals disagreed with the statement that, unit cost was affordable. When the principals were asked whether unit cost could be reduced, majority 56 (46%) of the principals were not sure. About half 54 (44%) of the principals disagreed on the statement that unit cost could be reduced while the minority 13 (11%) of the principals agreed that unit cost can be reduced. Furthermore Table 4.15 reveals that 42 (34%) of the principals were in agreement that unit cost could be increased. Another 43 (35%) of the principals disagreed with the idea that unit cost could be increased while 38 (31%) of the principal were not sure whether unit cost could be increased or not.

The issue of affordability of secondary education in Kenya and most of developing countries has been a subject of discussion for some time. The findings in this study, which has been presented, demonstrate that principals have variety of opinions on the question of affordability of secondary education in Kenya. Majority disagreed with the statement that unit cost is high. Therefore suggesting that, they find the current amounts of fees charged per student inadequate. Yet again, about half of the secondary school principals felt that the cost incurred per student per year (unit cost) could be increased.
These findings did not agree with the suggestion of various studies. In Kenya, Ngetich et al., (2014) observed that cost of education has continued to rise. ROK (1999) concurs and adds that the weight of this rapidly rising cost of education, has been mainly to the parents through the policy of cost sharing. Tobyehatch, (as cited in Munda & Odebero, 2014), aptly put it that education costs have been rising faster than consumer price indices. Furthermore, to show that the cost of secondary education has been rising over the years, Kenya Government has also been directing increasing financial allocation to secondary education sub-sector; consumption in secondary education increased ten times between 2010 and 2015 (ROK, 2016). More testimony of rising cost of secondary education is seen in the idea taken by the Government of Kenya where in an attempt to contain rising cost of secondary education, Government of Kenya issued fee guidelines. The intention of this fee guidelines was to curb the rising cost of education. Furthermore, majority of the principals felt that unit cost was affordable. While Muyia (1995) concluded that unit costs of secondary schools, could be lowered so that the difficulty of meeting costs of secondary education is reduced. However, in this study, majority of the secondary school principals did not agree with the idea that unit cost should be reduced.

4.6.2 Strategies of Cost Management

Eleven statements on the strategies of managing cost of secondary school education were presented to the secondary school principals. The principals were expected to agree or disagree on the statements presented to them. They could also indicate if they are not sure about the statements. The results of their responses are indicated in Table 4.16 below.
<table>
<thead>
<tr>
<th>Cost Management Strategies</th>
<th>Agree</th>
<th>Not sure</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effectiveness and efficiency of school management</td>
<td>106</td>
<td>12</td>
<td>5</td>
</tr>
<tr>
<td>Implementing competitive pricing and procurement</td>
<td>80</td>
<td>22</td>
<td>21</td>
</tr>
<tr>
<td>Ensuring accountability in financial management</td>
<td>102</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Initiating/enhancing income generating activities</td>
<td>78</td>
<td>8</td>
<td>37</td>
</tr>
<tr>
<td>Abolishing unnecessary levies</td>
<td>30</td>
<td>30</td>
<td>63</td>
</tr>
<tr>
<td>Effective implementation of the budget</td>
<td>95</td>
<td>11</td>
<td>17</td>
</tr>
<tr>
<td>Proper prioritization &amp; allocation of resources</td>
<td>56</td>
<td>23</td>
<td>44</td>
</tr>
<tr>
<td>Optimum utilization of physical and human resources</td>
<td>83</td>
<td>33</td>
<td>7</td>
</tr>
<tr>
<td>Establishing optimal sized schools</td>
<td>14</td>
<td>86</td>
<td>23</td>
</tr>
<tr>
<td>Abolishing Boarding/ establishing Day schools</td>
<td>5</td>
<td>21</td>
<td>97</td>
</tr>
<tr>
<td>Reviewing the system of secondary education</td>
<td>43</td>
<td>39</td>
<td>41</td>
</tr>
</tbody>
</table>

Table 4.16 above, shows that majority 106 (86%) of the secondary school principals agreed that one way of reducing cost of education is to improve on the effectiveness and efficiency of school management. Twelve (10%) of the principals were not sure whether effectiveness and efficiency will reduce cost of education, while a smaller group 5 (4%)
of the principals disagreed with the statement that being effective and efficient will reduce cost of education.

In addition, Table 4.16 shows that, 80 (65%) of the principals agreed that implementing competitive pricing and procurement, is one way of cost management in our education system. Twenty two (18 %) of the principals neither agreed nor disagreed that competitive procurement is a strategy that is useful in managing cost. Another 21 (17%) disagreed that implementing competitive pricing and procurement is an effective strategy to manage cost of education. Similarly, 102 (83%) of the principals were in agreement that ensuring accountability in financial management, is a strategy that can be used to manage cost of education. Yet 11 (9%) of the principal did not agree to this argument, while very small number 10 (8%) of the principals were not sure whether ensuring accountability in financial management was a strategy to manage educational cost.

Furthermore, Table 4.16 indicate that, majority 78 (63%) of the principals agreed with the idea that, Income Generating Activities can be initiated or enhanced so as to help in managing the rising cost of education in secondary schools in Kenya. However 37 (30%) of the principals did not agree to this perception, while a smaller group 8 (7%) of the principals neither agreed nor disagreed on the concept of initiating or enhancing Income Generating Activities, as one way of managing cost of education in secondary schools.

Abolishing unnecessary levies was considered as one strategy of managing cost of secondary education. When school principals were asked to indicate their opinion on this
strategy majority 63 (51%) of the principals did not agree, thirty (24%) of the principals agreed to the idea while another 30 (24%) of the principals were not sure whether this strategy is useful in managing cost of education. Moreover, Table 4.16 reveals that, majority 95 (77%) of the school principals agreed with the idea that, effective implementation of the budget was a strategy to managing cost of education. However, seventeen (14%) of the principals did not agree with that view, while a small number 11(9%) were not sure whether effective implementation of the budget was a strategy which can be used for managing cost of education in our secondary schools.

In addition, Table 4.16 above shows that, majority 56 (46%) of the school principals agreed that, proper prioritization and allocation of resources was a strategy for managing cost of education. However, 44 (36%) of the principals did not agree with that, while a minority 23 (19%) neither agreed nor disagreed; they were not sure as to the usefulness of proper prioritization and allocation of resources as a strategy for managing cost of education. On the other hand, majority 83 (68%) of the secondary school principals agreed that, optimum utilization of physical and human resources was a constructive strategy to manage cost of education. However, majority 86 (70%) of the principals, neither agreed nor disagreed whether establishing optimal size schools was a strategy to manage unit cost of education in secondary schools.

Furthermore, it can be revealed from Table 4.16 that, only 5 (4%) of the principals agreed to the concept that, abolishing Boarding schools and establishing Day schools was a strategy to manage rising unit cost of secondary education. Majority 97 (79%) did not
agree that abolishing Boarding and establishing Day schools was a strategy for managing unit cost. Reviewing the system of secondary education as a strategy to managing the ever increasing unit cost at secondary school system, received almost the same responses, with 35% in agreement, 33% in disagreement and 32% neither in agreement nor disagreement.

This finding indicate that, majority of the secondary school principals agreed that, effectiveness and efficiency, implementation of competitive pricing and procurement and ensuring that there is accountability in school financial management, were the strategies that can be employed to manage the rising cost of education. This is in tandem with MoEST (2002), assertion that, in order to achieve better academic performance in our educational institutions, and more so, at the secondary education level, sufficient human and physical resources, in addition to effective secondary school management, is required. This finding is also in agreement with Lewin (2006), who underlined the need for reforms that contain costs, enhancement in internal efficiency and encourage effectiveness in relation to secondary education in Sub-Saharan Africa. Furthermore, the sentiments of this finding are echoed by Pritchett and Filmer (1999) who argued that, an optimizing model of educational expenditure allocations, should lead to additional reimbursement that matches the added input.

The findings of this study demonstrate that, majority of the secondary school principals, perceive initiating and/ or enhancing income generating projects in schools as one way of attempting to manage cost of education. This is in agreement with Ipata (2011), who
posits that, with Income Generating Activities, needy learners are enabled to remain in school and thus improving their performance. This is echoed in a study by Omukoba et al., (2011), who argued that, public secondary schools can potentially generate additional income using resources available within them. In addition, this idea of alternative sources of financing education was also supported by Gongera and Okoth (2013), who found out that, part of the revenue from Income Generating Activities were used to procure more teaching and learning resources and upgrading school physical facilities. However, other studies by Nzoka and Orodho (2014), have found out that, even with Income Generating Activities, school financial muscle may remain poor. They observe that, in some instances Income Generating Activities failed to translate to any meaningful financial improvement that could be beneficial to the learners.

Furthermore, it was revealed in this study that, while majority of the secondary school principals disagreed with the statement that abolishing unnecessary levies enhances the effectiveness of managing educational cost in secondary schools, effective implementation of the budget, was agreed as a popular way of managing cost, according to the majority of the secondary school principals. This was, therefore, in harmony with Bisschoff and Mestry (2009), who illustrates that, a budget is the mission statement of the school which is expressed in monetary terms; as a tool used by the management, it brings about the achievement of the school’s goals and objectives and strategies. This therefore translates to improved academic performance.
While competitive pricing and procurement is an effective strategy to manage cost, it was interesting to note that about 17% of the principals did not agree that, this strategy can be useful in containing the ever increasing cost of education. Competitive pricing and procurement enables secondary schools to receive value for their money. It is a strategy which is very necessary at the time of competing demand for scarce resources. However, majority of the school principals agreed that proper prioritization and allocation of resources and optimum utilization of physical and human resources was one constructive strategy to manage cost of education. This study, therefore, agrees with Nzoka and Orodho (2014) that effective and prioritized resource allocation and utilization, is essential to achievement of educational goals. The same sentiments are held by Sabitu et al., (2012) who observe that, proper resource allocation leads to accomplishment of the national education objectives, and therefore, students are expected to perform well. Furthermore, the findings are in agreement with Philias and Wanjobi (2011) who laid emphasis on the need for effective prioritization of resource allocation for better performance of the students.

Despite serious advocacy by scholars that, unit cost can be managed by striving to achieve optimal sized schools, in this study, it was revealed that, majority of the secondary school principals, were not sure whether establishing optimal sized schools was an effective strategy to manage unit cost of education. This implies that the idea of optimal school size has not been embraced. Due to rising educational cost there is need to utilize the little resources we have. Nafukho (1995) identified increasing school size to optimal level as one of the strategies of reducing cost per student per year (unit cost).
Musoga (2012) agrees to this argument and notes that, consumption of educational resources can be achieved by increasing school size from a single stream to a minimum of four streams in Boarding secondary schools and three streams in Day schools. In addition, Kosgei and Rono (2004) observers that, we can save cost in our education system by avoiding the quest of setting up new schools, instead we need to expand and put into optimal use the schools that are already available. These studies, therefore, emphasized the idea of optimal schools size as one way of managing unit cost of education. However, the findings of the current study noted that majority of the principals were not sure of optimal sized schools as an effective strategy to manage unit cost of education.

Whereas, KIPPRA (2007) recommends the abolition of public Boarding secondary schools in Kenya as one way of cost savings, in this study, majority of the school principals did not agree that, abolishing Boarding schools and establishing Day schools was an effective strategy of managing unit cost. These findings are also not in agreement with the findings of Akaranga and Simiyu (2016), who suggested that, there was need to construct cost effective Day secondary schools in order to improve learners’ performance. Thus, the suggestions by the MoEST (2005) and TSC (2007) on the need to encourage the growth of Day schools as a way of increasing participation in secondary education and reducing cost of secondary education is not being received well by the school principals.
CHAPTER FIVE

SUMMARY OF THE FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents summary of the findings, conclusions and recommendations of the study. Suggestions for further research are also indicated. They are based on the interpretations and discussions of the findings presented in chapter four. The purpose of this study was to analyze the influence of unit cost on learners’ academic performance in the types of secondary schools and develop strategies for effective management of unit cost in Kenya. The study mainly sought to examine: - unit cost of the types of secondary schools in Nandi County; the academic performance of learners in the types of secondary schools in Nandi County; the influence of unit cost on academic performance of learners in the types of secondary schools in Nandi County and to explore strategies for effective management of unit cost to enhance academic performance of learners in secondary schools.

5.2 Summary of the Findings

Based on the objectives set for this study, the summary of the findings are given in the following four sub sections;

5.2.1 Unit Cost of the Types of Secondary Schools in Nandi County.

The first objective of this study sought to examine unit cost of the types of secondary schools in Nandi County, Kenya. The findings revealed that, Day and Boarding secondary schools spent a total of Ksh.1.2 billion and Ksh.1.7 billion respectively, for the
four year period (2012-2015). Yearly average expenditure was Ksh. 321 million and Ksh. 429 million for Day and Boarding secondary schools respectively. Total expenditure for the two types of schools rose by 127 percent from Ksh. 487 million in 2012 to Ksh. 1.1 billion in 2015. Average unit cost for the sampled schools for the period 2012-2015 was Ksh. 22,263 and Ksh. 54,828 for Day and Boarding secondary schools respectively. The highest unit cost recorded was Ksh. 96,400 and Ksh. 37,593 for Boarding and Day secondary schools respectively. The lowest unit cost recorded was Ksh. 50,234 and Ksh. 17,410 for Boarding and Day secondary schools respectively. There was a huge range between a school which spent on average the highest per student and the one which spent the lowest per student.

The finding on unit cost shows a wide variation in cost per student per year (unit cost) even for schools of the same type located in the same geographical locality. Whereas unit cost within the same type of school varies, learners in Boarding secondary schools spent more than those in Day secondary schools. Different levels of cost per student (unit cost) in different school type are issues of concern; this is principally because unit cost is a result of total cost and enrolment; at the same time total cost is linked to resource inputs. Given the Government fees limit for each category of schools, the findings of this study was that, majority (70%) of the Boarding secondary schools spent within the set limit, while majority (74%) of the Day schools in this study spent beyond the set limit. Because of this, there is need to re-examine the design of fee guidelines for Day secondary schools. It is also noticeable that, all Day secondary schools have introduced a vote head on meals which mainly caters for lunch program. This makes it indispensable that, a
guideline be issued on how much should be spent on meals and other related items. Other schools spent beyond the set fee limit while others established additional areas of spending, such as, development, academic and PTA teachers’ fund. The inclusion of other levies not in the fee guidelines, lift up the question of the efficacy of this fee guidelines. Furthermore, the study found out that there was a significant difference in unit cost between Boarding and Day secondary schools in Nandi County ($t(121) = 31.516, p = 0.000$).

5.2.2 The Academic Performance of Learners in the Types of Secondary Schools

The second objective of this study examined the academic performance of learners in the types of secondary schools in Nandi County, Kenya. Academic performance is considered by the grades attained at the KCSE examinations. Boarding and Day secondary schools sampled for the study recorded a four year (2012-2015) average mean of 7.1184 and 4.7391 respectively. The highest average mean that was attained in the four years was 7.4358 and 4.9612 for Boarding and Day secondary schools respectively. On the other hand, the lowest average mean scored in the four years was 6.8956 and 4.5464 for Boarding and Day secondary schools respectively. Boarding secondary schools performed at a mean grade of C plus while Day secondary schools performance was just at grades C and C minus. On average, therefore, Boarding secondary schools performed better than Day secondary schools. The study further revealed that, the sampled schools in the county had a mean grade of C (6.2782) for the 2015 KCSE, this being a positive improvement of 0.155 compared to the 2014 KCSE results. In the year 2015, the County had 43.5% of the candidates who scored grades C+ and above. Considering KCSE in the
year 2015, Boarding secondary schools attained an average mean score of 7.4358, while Day secondary schools had an average mean score of 4.5464. On testing the hypothesis, it was found out that there was a significant difference in academic performance between Boarding secondary schools and Day secondary schools ($t(121) = 9.990, p = 0.000$). Therefore, the findings of this study was that, academic performance of learners in Boarding schools are different from academic performance of learners in Day schools and that performance of learners in Boarding schools was better than those in Day schools. Majority of the secondary principals in Nandi County point out that the performance at the KCSE level in the year 2012-2015, were not satisfactory considering the financial resource inputs during this period.

5.2.3 The Influence of Unit Cost on Academic Performance of Learners in the Types of secondary schools.

The third objective of this study was to examine the influence of unit cost on academic performance of learners in the types of secondary schools in Nandi County, Kenya. The study found out that, the dependent variable could be explained by variation in the independent variable. Thus the variation in academic performance could be explained by differences in the unit cost. However, 61.4% variation in the level of academic performance, can be explained by other variables not covered in this study. The study therefore, revealed that, there was a positive significant relationship between academic performance and unit cost in Boarding secondary schools. On the other hand, it was found out that 6.4% in the variation in academic performance for Day secondary schools, could be explained by differences in the unit cost. The remaining 93.6% variation in the level of academic performance could be explained by other variables not covered in this
study. It therefore follows that, there was a positive significant relationship between academic performance and unit cost in Day secondary schools where the study was done; t(91) = 2.503, p<0.05. This shows that 25.4% of the change in the level of academic performance was due to unit cost. For Boarding secondary schools, there was also a positive significant relationship between academic performance and unit cost; t(28) = 4.192, p<0.05. This implies that, in Boarding secondary schools, 62.1% of the change in the level of academic performance, is due to unit cost.

This study found out that, majority of the secondary school principals in the County were in agreement that, the scores attained at the KCSE examinations could be ascribed to the cost of education. They were of the opinion that, their performance could have even been enhanced if they had been given more resources to make effective learning possible. However, about a quarter of the secondary school principals felt that, there are other factors, such as, learners’ entry behaviour, teacher student ratio, teacher and learners’ attitude, learners’ social and economic background, might have affected learners’ achievements.

5.2.4 Strategies for Managing Unit Cost to Enhance Academic Performance

The fourth objective of this study explored strategies for effective management of unit cost to enhance academic performance of learners in secondary schools in Nandi County, Kenya. The question of affordability of secondary education in Kenya has been a subject of discussion for some time. The findings in this study display that, secondary school principals, have array of opinions on the question of affordability of secondary education
in Kenya. It was revealed that, majority of the secondary school principals disagreed with the statement that unit cost was high. Therefore, suggesting that, they find the current amounts of fees charged per student inadequate. About half of the secondary school principals felt that, cost incurred per student per year (unit cost) can be increased from the current level. While majority of the principals felt that, unit cost was affordable and thus they did not agree with the idea that, unit cost should be reduced.

The study further revealed that, majority of the secondary school principals felt that, strategies of managing cost of secondary education include; improving the effectiveness and efficiency of school management, implementing competitive pricing and procurement and ensuring accountability in financial management. Furthermore, the findings of this study lay bare that, majority of the secondary schools principals perceive initiating and/ or enhancing Income Generating Projects in schools was one way of attempting to manage cost of secondary education. On the other hand, majority of the school principals were of the opinion that, proper prioritization and allocation of resources and optimum utilization of physical and human resources was one productive strategy to manage cost of education. While majority of the secondary schools principals did not feel that, abolishing Boarding secondary schools and establishing Day secondary schools was a strategy for managing unit cost, majority of them agreed with the suggestion that effective implementation of the budget was a strategy for managing the cost of education. Notwithstanding solemn encouragement by scholars that, unit cost can be managed by striving at achieving optimal sized schools, in this study it was revealed
that, majority of the secondary school principals were not sure whether establishing optimal sized schools was a strategy to manage unit cost of education.

5.3 Conclusions

Emanating from the findings of this study, it can be concluded that, majority of the students were learning in the Sub-County schools - these are the Day schools. This state of affairs represents the common image of secondary schools in Kenya where there are more Sub-County. Even though students who are in Boarding schools have additional learning time compared to those students who go to Day schools, Boarders are expected to pay extra fee to provide for their boarding cost while in school. Although day scholars pay comparatively less than those learners in Boarding schools, students in Day schools have to travel to and from schools every day and consequently use greater part of their precious time travelling. Condensed learning time for Day school learners may, in some way, influence their academic performance at the KCSE examinations and thus their achievements at the end of secondary education level. It can be observed that majority of the learners attended Day Schools because of the cost of secondary education. It is true that fees payable in Day Schools, to a great extent, are less compared to fees payable in Boarding Schools. The major reason for this difference is mainly because of the boarding charges component. This findings show that there was a big discrepancy in unit cost of learners in the different types of schools. The range between the highest unit cost and the lowest unit cost in both Day schools and Boarding schools, indicated huge difference in the amounts spent by schools. While unit cost within the same type of school varies, learners in Boarding schools spent more than those in Day schools. Therefore there was a
significant difference in unit cost between Boarding and Day secondary schools in Nandi County. Furthermore, majority of the Boarding schools spent within the limit set in the fees guideline but majority of the Day schools in this study spent beyond the set limit. Other schools established extra areas of spending such as development and academic funds. The addition of other levies not in the fee guidelines raises the question of the usefulness of this fees guideline.

Although majority of the secondary principals in Nandi County felt the performance at the KCSE level in the year 2012-2015, were not satisfactory, the County had 43.5% of the candidates who scored grades C+ and above in 2015 KCSE examinations. It was found out that, there was a significant difference in academic performance between Boarding and Day secondary schools; the academic performance of learners in Boarding schools were different from academic performance of learners in Day schools and that, performance of learners in Boarding schools were better than those in Day schools.

Although 61.4% variation in the level of academic performance can be explained by other variables not covered in this study, the study revealed that, for both Day secondary schools and Boarding secondary schools, there was a positive significant relationship between academic performance and unit cost; for Day secondary schools, 25.4% of the change in the level of academic performance is due to unit cost while for Boarding secondary schools, 62.1% of the change in the level of academic performance was due to unit cost. Even though majority of the secondary school principals in the County felt that, the scores achieved at the KCSE examinations can be linked to the cost of
education, they noted that there are other factors such as learners’ entry behaviour, teacher student ratio, teacher and learners’ attitude, learners’ social and economic background that influence learners’ achievements.

The findings in this study demonstrate that, secondary school principals had a number of opinions on the issue of affordability of secondary education. Majority of them felt that the amounts of fees charged per student (unit cost) to be inadequate. The principals felt that, strategies of managing cost of secondary education include; improving on the effectiveness and efficiency of school management, implementing competitive pricing and procurement and ensuring accountability in financial management. However majority of the secondary schools principals did not feel that, abolishing Boarding schools and establishing Day schools was a good strategy of managing increasing unit cost. Again majority were not sure if indeed setting up optimal sized schools was an effective strategy to manage unit cost of education.

5.4 Recommendations of the study

Based on the findings of this study, the following recommendations were made:

i. For effective management of unit cost, there is need to priorities expenditure so that there is appropriate allocation of financial resources for acquisition of teaching and learning resources and thus enhance learner achievements.

ii. To have effective unit cost, Ministry of Education need to consult widely when setting secondary fee guidelines so as to arrive at a reasonable amount to be
charged per student (unit cost). Again adherence to fee guidelines issued by the Ministry of Education should be made a norm rather than exception.

iii. Education stakeholders need to appreciate the attempt by Ministry of Education to focus on the costs that schools incur for each individual learner (the concept of unit cost) rather than taking them as a group of learners who utilized certain amount of resources. Each student should be seen to be in school to be processed into a graduate using reasonable amount of resources.

iv. The Ministry of Education and the School Management Board should continuously explore cost effective measures to reduce unit cost of secondary education so as to improve access and performance. Financial prudence will remain a guiding principle if we are to get value for the enormous resources going to secondary education sub-sector.

v. The Government needs to reinforce the audit wing of the Ministry of Education so that it can examine the effectiveness of utilization of monetary resources collected and allocated to secondary schools. It is, therefore, recommended that emphasis is given to prudent management of resources rather than the question of how much resources can be channeled to the secondary school system.

5.5 Suggestions for Further Research

The following are the areas that need further research:

i. A research of this nature be carried out on a larger population in several Counties or nationally. This would provide a deeper insight on the influence of unit cost on academic performance of learners in the types of secondary schools.
ii. From the findings of this study it was evident that unit cost varies from one school to another; even schools of the same type incurred different amount per student (unit cost). Thus a study on the factors which lead to this variation in unit cost need to be done.

iii. A study on predictive strength and direction of other factors other than unit cost affecting learner achievements in secondary schools should be carried out. Suggested factors include class size, entry behaviour, and teacher and student attitudes teacher experience and teacher qualification.

iv. A study on the availability, magnitude and contribution of fixed assets towards learner achievements in secondary schools should be carried out. Suggested fixed assets include land, machinery, plants among other fixed assets that the schools are endowed with.
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APPENDICES

Appendix 1: Letter to the School Principal

Solomon Kipyego Ngetich
Moi University,
Department of Educational Management & Policy Studies,
P. O. Box, 3900,
Eldoret.
20th June 2016

The Principal
_______________________
_______________________
_______________________

Dear Sir/Madam

RE: PERMISSION TO CARRY OUT RESEARCH IN YOUR SCHOOL

I am a Postgraduate student in Moi University, School of Education, Department of Educational Management and Policy Studies, taking Doctor of Philosophy in Educational management.

I am required to carry out a research on ‘Unit cost Management and Learners Academic Performance in Kenya: An analysis of the Types of Secondary Schools.

Kindly assist by responding to the questions availed with utmost honest. The responses will be used purely for purposes of this study and will be treated with absolute confidentiality.

Thanks in advance

Yours faithfully

Solomon K. Ng’etich.
Appendix 2: Questionnaire for School Principals

This questionnaire is meant for research purpose only. The information you give will be treated confidentially. You are required to consider each question and give utmost honest response to make this study possible.

Please tick ( √ ) or fill in the blanks as appropriate. Please respond to all items

1. Which is true to your school?
   (a) National School [  ]  (b) Extra-County School [  ]  
   (c) County School [  ]  (d) Sub-County School [  ]

2. Please tick the type of your school.
   (a) Boarding School [  ]  (b) Day School [  ]

3. What was the school's enrolment in the years…………………………………………………
   2012…………………………………………………………………………………..
   2013…………………………………………………………………………………..
   2014…………………………………………………………………………………..
   2015…………………………………………………………………………………..

4. Fill the table below by indicating the actual cost you incurred for each vote head in each of the years, 2012 to 2015.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Expenditure (Ksh.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td></td>
</tr>
</tbody>
</table>
5. How much per student per year does your school charge for each of the following:
   - Motivation
   - Mock examinations
   - Admission fees
   - Uniforms
   - Desk
   - Textbooks

6. What are other levies that your school charges each student, list them giving amount in each case.
   i. .......................................................... Ksh ..........................................
   ii. .......................................................... Ksh ..........................................
   iii. .......................................................... Ksh ..........................................

7. Indicate KCSE performance (mean score) in your school for the following years:

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Candidates</th>
<th>Mean Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8. Indicate your level of satisfaction with the KCSE results given the financial resource input by your school.
   - Not satisfactory [ ]
   - Undecided [ ]
   - Satisfactory [ ]

9. Do you think scores attained can be due to the cost of educating the student (Unit cost)?
   - Yes [ ]
   - No [ ]
   - I do not know [ ]

11. Respond with a tick (✓) to the following statements about the cost of educating one student in secondary school in a year (unit cost).
Key: A= AGREE, N= NOT SURE, D= DISAGREE

<table>
<thead>
<tr>
<th>Statement</th>
<th>A</th>
<th>N</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost incurred per student per year is High</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost incurred per student per year is Affordable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost incurred per student per year can be Reduced</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost incurred per student per year can be Increased</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12. The following are strategies that may be considered in managing cost of education.
Indicate your response with a tick ( √ ) for each case.

Key: A= AGREE, N= NOT SURE, D= DISAGREE

<table>
<thead>
<tr>
<th>Statement</th>
<th>A</th>
<th>N</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve effectiveness and efficiency of school management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implementing competitive pricing and procurement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ensuring accountability in financial management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initiating/enhancing income generating activities in school</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abolishing unnecessary levies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effective implementation of the budget</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proper prioritization &amp; allocation of resources</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optimum utilization of physical and human resources</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Establishing optimal sized schools</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abolishing Boarding/ establishing Day schools</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reviewing the system of secondary education</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

13. Please indicate other possible strategies that may be considered in managing cost of education

Thank you
Appendix 3: Document Analysis

(i) Fees structures,

Fees structures were collected and analysis in order to get the direction of expenditure in the school visited.

(ii) Fees guidelines from the MoEST.

Fees guideline collected, limits for each vote expenditure identified and used to make comparison

Analysis of fees guidelines.

(iii) Circulars from the Ministry of Education.

Collection and analysis of circulars from the Ministry of Education on the free Day Secondary Education. This documents contain regulation on government subsidy disbursement to schools.

(iv) KCSE performance for the schools visited

From yearly income and expenditure accounts actual cost incurred for each vote head in each of the years, 2012 to 2015 are to be indicated.

<table>
<thead>
<tr>
<th>Vote head</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition (SES)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boarding (BBS)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contingency</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repairs, Maintainance &amp; Intallation (RMI)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electricity, Water and Conservancy (EWC)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Activity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local Traveling &amp; Transport (LTT)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caution</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Development project</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal Emoluments (PE)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Line Graph Presentation of Total Number of Secondary Schools in Kenya (2010-2015)

<table>
<thead>
<tr>
<th>Description</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Public Secondary schools</td>
<td>5,296</td>
<td>5,311</td>
<td>6,188</td>
<td>6,807</td>
<td>7,680</td>
<td>8,297</td>
</tr>
<tr>
<td>Number of Private secondary schools</td>
<td>905</td>
<td>946</td>
<td>986</td>
<td>1,027</td>
<td>1,067</td>
<td>1,143</td>
</tr>
<tr>
<td><strong>Total number of Secondary Schools</strong></td>
<td><strong>6,201</strong></td>
<td><strong>6,257</strong></td>
<td><strong>7,174</strong></td>
<td><strong>7,834</strong></td>
<td><strong>8,747</strong></td>
<td><strong>9,440</strong></td>
</tr>
</tbody>
</table>


Line Graph Presentation of Secondary School Enrolment by Class (2010-2015)

<table>
<thead>
<tr>
<th>Class</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form 1</td>
<td>498,933</td>
<td>521,601</td>
<td>532,128</td>
<td>617,528</td>
<td>673,419</td>
<td>732,664</td>
</tr>
<tr>
<td>Form 2</td>
<td>443,944</td>
<td>460,021</td>
<td>513,938</td>
<td>541,977</td>
<td>633,645</td>
<td>691,411</td>
</tr>
<tr>
<td>Form 3</td>
<td>398,609</td>
<td>413,045</td>
<td>457,427</td>
<td>496,090</td>
<td>557,934</td>
<td>627,513</td>
</tr>
<tr>
<td>Form 4</td>
<td>311,898</td>
<td>373,053</td>
<td>411,330</td>
<td>488,667</td>
<td>466,699</td>
<td>507,393</td>
</tr>
<tr>
<td>Total</td>
<td>1,653,384</td>
<td>1,767,720</td>
<td>1,914,823</td>
<td>2,144,262</td>
<td>2,331,697</td>
<td>2,558,981</td>
</tr>
</tbody>
</table>


Graph Presentation of the Total Expenditure for Secondary Education, 2010/11-2015/16

<table>
<thead>
<tr>
<th>Description</th>
<th>2010/11</th>
<th>2011/12</th>
<th>2012/13</th>
<th>2013/14</th>
<th>2014/15</th>
<th>2015/16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Expenditure for the MoEST</td>
<td>179,000</td>
<td>207,460</td>
<td>260,122</td>
<td>251,212</td>
<td>284,165</td>
<td>319,425</td>
</tr>
<tr>
<td>Total Expenditure for Secondary Education</td>
<td>3,026</td>
<td>19,198</td>
<td>25,076</td>
<td>22,803</td>
<td>29,862</td>
<td>32,996</td>
</tr>
</tbody>
</table>

Source: Economic Survey 2016
### Appendix 7: National Trends in KCSE Candidates Mean Grade - (2010-2015)

<table>
<thead>
<tr>
<th>Grade</th>
<th>Year Points</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>12</td>
<td>1,566</td>
<td>1,930</td>
<td>1,975</td>
<td>2,722</td>
<td>3,073</td>
<td>2,636</td>
</tr>
<tr>
<td>A-</td>
<td>11</td>
<td>6,565</td>
<td>9,063</td>
<td>9,235</td>
<td>9,768</td>
<td>11,768</td>
<td>11,618</td>
</tr>
<tr>
<td>B+</td>
<td>10</td>
<td>12,737</td>
<td>16,390</td>
<td>17,730</td>
<td>17,013</td>
<td>19,814</td>
<td>21,166</td>
</tr>
<tr>
<td>B</td>
<td>9</td>
<td>18,173</td>
<td>22,944</td>
<td>25,183</td>
<td>24,656</td>
<td>29,319</td>
<td>32,706</td>
</tr>
<tr>
<td>B-</td>
<td>8</td>
<td>24,727</td>
<td>30,115</td>
<td>31,110</td>
<td>30,864</td>
<td>38,315</td>
<td>43,788</td>
</tr>
<tr>
<td>C+</td>
<td>7</td>
<td>33,366</td>
<td>39,216</td>
<td>38,471</td>
<td>38,351</td>
<td>47,428</td>
<td>53,852</td>
</tr>
<tr>
<td>C</td>
<td>6</td>
<td>43,769</td>
<td>49,965</td>
<td>48,905</td>
<td>48,571</td>
<td>58,688</td>
<td>63,977</td>
</tr>
<tr>
<td>C-</td>
<td>5</td>
<td>52,410</td>
<td>58,845</td>
<td>58,748</td>
<td>60,763</td>
<td>70,677</td>
<td>73,080</td>
</tr>
<tr>
<td>D+</td>
<td>4</td>
<td>56,762</td>
<td>63,853</td>
<td>67,203</td>
<td>71,803</td>
<td>76,198</td>
<td>78,092</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>56,861</td>
<td>64,392</td>
<td>73,566</td>
<td>78,177</td>
<td>73,501</td>
<td>78,544</td>
</tr>
<tr>
<td>D-</td>
<td>2</td>
<td>41,207</td>
<td>47,273</td>
<td>52,433</td>
<td>55,793</td>
<td>47,716</td>
<td>47,962</td>
</tr>
<tr>
<td>E</td>
<td>1</td>
<td>6,198</td>
<td>6,600</td>
<td>7,884</td>
<td>7,039</td>
<td>5,636</td>
<td>5,209</td>
</tr>
<tr>
<td>Canditature</td>
<td></td>
<td>354,341</td>
<td>410,586</td>
<td>432,443</td>
<td>445,520</td>
<td>482,133</td>
<td>512,630</td>
</tr>
<tr>
<td>Average Point</td>
<td></td>
<td>5.14</td>
<td>5.24</td>
<td>5.17</td>
<td>5.12</td>
<td>5.39</td>
<td>5.44</td>
</tr>
<tr>
<td>Average Grade</td>
<td></td>
<td>C-</td>
<td>C-</td>
<td>C-</td>
<td>C-</td>
<td>C-</td>
<td>C-</td>
</tr>
</tbody>
</table>

Source: Economic Survey 2016
Appendix 8: Recommended Fees Structure for Secondary Schools 2016. (Kenya)

<table>
<thead>
<tr>
<th>Vote heads</th>
<th>Sub County/ Day Schools (Ksh.)</th>
<th>National, Extra County &amp; County Boarding (Ksh.)</th>
<th>Special Needs (Ksh.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching Learning Materials</td>
<td>4,792</td>
<td>4,792</td>
<td>9,067</td>
</tr>
<tr>
<td>BES and Meals/L</td>
<td>0</td>
<td>32,385</td>
<td>32,385</td>
</tr>
<tr>
<td>RM &amp; I</td>
<td>1,886</td>
<td>3,192</td>
<td>2,422</td>
</tr>
<tr>
<td>LT &amp; T</td>
<td>1,833</td>
<td>2,421</td>
<td>2,144</td>
</tr>
<tr>
<td>Administration Costs</td>
<td>1,572</td>
<td>3,316</td>
<td>1,900</td>
</tr>
<tr>
<td>EWC</td>
<td>3,151</td>
<td>7,802</td>
<td>4,047</td>
</tr>
<tr>
<td>Medical</td>
<td>689</td>
<td>786</td>
<td>1,614</td>
</tr>
<tr>
<td>Activity Fees</td>
<td>1,256</td>
<td>1,398</td>
<td>1,462</td>
</tr>
<tr>
<td>Personal Emolument</td>
<td>5,755</td>
<td>8,672</td>
<td>13,155</td>
</tr>
<tr>
<td>PTA Development. Projects</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Insurance (Medical &amp; Property)</td>
<td>1,310</td>
<td>1,660</td>
<td>1,614</td>
</tr>
<tr>
<td>Total School Fees</td>
<td>22,244</td>
<td>66,424</td>
<td>69,810</td>
</tr>
<tr>
<td><strong>Less GOK Subsidy</strong></td>
<td><strong>12,870</strong></td>
<td><strong>12,870</strong></td>
<td><strong>32,600</strong></td>
</tr>
<tr>
<td><strong>Total Fees Less GOK Subsidy</strong></td>
<td><strong>9,374</strong></td>
<td><strong>53,553</strong></td>
<td><strong>37,210</strong></td>
</tr>
</tbody>
</table>
Appendix 9: Recommended Sample Size from a Given Population

<table>
<thead>
<tr>
<th>N</th>
<th>S</th>
<th>N</th>
<th>S</th>
<th>N</th>
<th>S</th>
<th>N</th>
<th>S</th>
<th>N</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>10</td>
<td>100</td>
<td>80</td>
<td>280</td>
<td>162</td>
<td>800</td>
<td>260</td>
<td>2800</td>
<td>338</td>
</tr>
<tr>
<td>15</td>
<td>14</td>
<td>110</td>
<td>86</td>
<td>290</td>
<td>165</td>
<td>850</td>
<td>265</td>
<td>3000</td>
<td>341</td>
</tr>
<tr>
<td>20</td>
<td>19</td>
<td>120</td>
<td>92</td>
<td>300</td>
<td>169</td>
<td>900</td>
<td>269</td>
<td>3500</td>
<td>346</td>
</tr>
<tr>
<td>25</td>
<td>24</td>
<td>130</td>
<td>97</td>
<td>320</td>
<td>175</td>
<td>950</td>
<td>274</td>
<td>4000</td>
<td>351</td>
</tr>
<tr>
<td>30</td>
<td>28</td>
<td>140</td>
<td>103</td>
<td>340</td>
<td>181</td>
<td>1000</td>
<td>278</td>
<td>4500</td>
<td>351</td>
</tr>
<tr>
<td>35</td>
<td>32</td>
<td>150</td>
<td>108</td>
<td>360</td>
<td>186</td>
<td>1100</td>
<td>285</td>
<td>5000</td>
<td>357</td>
</tr>
<tr>
<td>40</td>
<td>36</td>
<td>160</td>
<td>113</td>
<td>380</td>
<td>181</td>
<td>1200</td>
<td>291</td>
<td>6000</td>
<td>361</td>
</tr>
<tr>
<td>45</td>
<td>40</td>
<td>180</td>
<td>118</td>
<td>400</td>
<td>196</td>
<td>1300</td>
<td>297</td>
<td>7000</td>
<td>364</td>
</tr>
<tr>
<td>50</td>
<td>44</td>
<td>190</td>
<td>123</td>
<td>420</td>
<td>201</td>
<td>1400</td>
<td>302</td>
<td>8000</td>
<td>367</td>
</tr>
<tr>
<td>55</td>
<td>48</td>
<td>200</td>
<td>127</td>
<td>440</td>
<td>205</td>
<td>1500</td>
<td>306</td>
<td>9000</td>
<td>368</td>
</tr>
<tr>
<td>60</td>
<td>52</td>
<td>210</td>
<td>132</td>
<td>460</td>
<td>210</td>
<td>1600</td>
<td>310</td>
<td>10000</td>
<td>373</td>
</tr>
<tr>
<td>65</td>
<td>56</td>
<td>220</td>
<td>136</td>
<td>480</td>
<td>214</td>
<td>1700</td>
<td>313</td>
<td>15000</td>
<td>375</td>
</tr>
<tr>
<td>70</td>
<td>59</td>
<td>230</td>
<td>140</td>
<td>500</td>
<td>217</td>
<td>1800</td>
<td>317</td>
<td>20000</td>
<td>377</td>
</tr>
<tr>
<td>75</td>
<td>63</td>
<td>240</td>
<td>144</td>
<td>550</td>
<td>225</td>
<td>1900</td>
<td>320</td>
<td>30000</td>
<td>379</td>
</tr>
<tr>
<td>80</td>
<td>66</td>
<td>250</td>
<td>148</td>
<td>600</td>
<td>234</td>
<td>2000</td>
<td>322</td>
<td>40000</td>
<td>380</td>
</tr>
<tr>
<td>85</td>
<td>70</td>
<td>260</td>
<td>152</td>
<td>650</td>
<td>242</td>
<td>2200</td>
<td>327</td>
<td>50000</td>
<td>381</td>
</tr>
<tr>
<td>90</td>
<td>73</td>
<td>270</td>
<td>155</td>
<td>700</td>
<td>248</td>
<td>2400</td>
<td>331</td>
<td>75000</td>
<td>382</td>
</tr>
<tr>
<td>95</td>
<td>76</td>
<td>270</td>
<td>159</td>
<td>750</td>
<td>256</td>
<td>2600</td>
<td>335</td>
<td>100000</td>
<td>384</td>
</tr>
</tbody>
</table>

Key: “N” is Population Size

“S” is Sample Size.

Appendix 10: Introduction Letter from the Dean School of Education

MOI UNIVERSITY
Office of the Dean School of Education
Tel: (053) 43001-8                         P.O. Box 3900
     (053) 43555                         Eldoret, Kenya
Fax: (053) 43555


The Executive Secretary
National Council for Science and Technology
P.O. Box 30623-00100
NAIROBI

Dear Sir/Madam,

RE: RESEARCH PERMIT IN RESPECT OF SOLOMON KIPYEGO NGETICH – (EDU/DPHILA/1011/13)

The above named is a 2nd year Postgraduate Higher Degree (PhD) student at Moi University, School of Education, Department of Educational Management and Policy Studies.

It is a requirement of his PhD Studies that he conducts research and produces a dissertation. His research is entitled:


Any assistance given to enable him conduct research successfully will be highly appreciated.

Yours faithfully,

[Handwritten Signature]

PROF. J. N. KINDKIKI
DEAN, SCHOOL OF EDUCATION

[Handwritten Name]
Appendix 11: Research Authorization From NACOSTI

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Ref: NACOSTI/P/16/65790/12793

Solomon Kipnyego Ngetich
Moi University
P.O. Box 3900-30100
ELDORET.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on “Unit cost management and learners academic performance in Kenya: An analysis of the types of secondary schools,” I am pleased to inform you that you have been authorized to undertake research in Nandi County for the period ending 29th July, 2017.

You are advised to report to the County Commissioner and the County Director of Education, Nandi County before embarking on the research project.

On completion of the research, you are expected to submit two hard copies and one soft copy in pdf of the research report/thesis to our office.

DR. STEPHEN K. KIBIRU, PhD.
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Nandi County.

The County Director of Education
Nandi County.
Appendix 12: Research Permit from NACOSTI

This is to certify that:

Mr. Solomon Kipyego Ng'etich
of Moi University, 1993-30100 Elldoret, has been permitted to conduct research in Nandi County on the topic: Unit Cost Management and Learners Academic Performance in Kenya: An Analysis of the Types of Secondary Schools for the period ending 29th July, 2017.

Permit No: NACOSTI/P/16/65790/12793
Date of Issue: 1st August, 2016
Fee Received: KSh 2000

Director General
National Commission for Science, Technology & Innovation

Applicant’s Signature

Republic of Kenya
National Commission for Science, Technology and Innovation

Condition:
1. You must report to the County Commissioner and the County Education Officer of the area before embarking on your research. Failure to do this may lead to the cancellation of your permit.
2. Government Officers will not be interviewed without prior appointment.
3. No questionnaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
5. You are required to submit at least two (2) hard copies and one (1) soft copy of your final report.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice.
Appendix 13: Research Authorization from C.D.E. Nandi County

MINISTRY OF EDUCATION
STATE DEPARTMENT OF BASIC EDUCATION

Telephone: Kapsabet 0773044624
E-mail: cdendicounty@yahoo.com
Fax: 05352084
When replying please quote

Re: NDI/CDE/GEN/1/VOL.II/178

Solomon Kipyego Ngetich,
Moi University,
P.O Box 3900-30100,
ELDORET.

RE: RESEARCH AUTHORISATION.

The above named person has been granted permission by the CDE to carry out research on "Unit cost management and learners academic performance in Kenya: An analysis of the types of secondary schools," in Nandi County.

Kindly provide him all necessary support he requires.

Obed Guto,
For: County Director of Education,
NANDI COUNTY.
THE PRESIDENCY
MINISTRY OF INTERIOR AND COORDINATION OF NATIONAL GOVERNMENT

Tel: 053 52621, 52003, Kapsabet
Fax No. 053 – 52503
E-mail: nandicountycommissioner@gmail.com
When replying, please quote
Ref: No. NC.EDU/4/1/VOL.III/(88)

County Commissioner’s Office,
Nandi County
P.O. Box 30,
KAPSABET.
3rd October, 2016

Solomon Kipyego Ngetich
Moi University
P.O. BOX 3900-30100,
ELDOR.ET.

RE: RESEARCH AUTHORIZATION

This is in reference to letter No. NACOSTI/P/16/65790/12793
dated 1st August, 2016 from the Director General/CEO, National
Commission for Science, Technology and Innovation on the above subject
matter.

You are hereby authorized to conduct a research on “Unit cost
management and learners academic performance in Kenya: An
analysis of the types of secondary schools” in Nandi County for the
period ending 29th July, 2017.

Wishing you all the best.

IMMACULATE S. KIMONDIU
For: COUNTY COMMISSIONER
NANDI.
Appendix 15: Nandi County Administrative Boundaries.