An Examination of Unit Cost of Day and Boarding Secondary Schools in Nandi County, Kenya

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Abstract: In the face of the rising cost of secondary education, the concept of unit cost of secondary education is gaining great importance. This study analyzed Unit Cost of Day and Boarding secondary schools in Nandi County, Kenya. Specifically the study sought; to establish variable cost, to determine unit cost, to compare unit cost and government fees limits and to compare unit cost of Day and Boarding secondary schools. This study was guided by Cost Function derived from the Education Production Function theory. The study employed survey as a research strategy; targeted all the principals in 186 public secondary schools, It employed stratified random sampling and then systematic random sampling. A pilot study was used in determining the reliability where Pearson Product Moment Coefficient (r) of 0.807 was obtained. For Validity of the research tools, experienced team of supervisors carefully and critically examined the instruments. Data was analyzed using means, percentages and t-test. The findings revealed that, Variable cost for the period (2012-2015) in Day and Boarding schools was Ksh.1.2 billion and Ksh.1.7 billion respectively. It was found out that, average unit cost for the period 2012-2015 was Ksh. 22,263 and Ksh. 54,828 for Day and Boarding schools respectively. This study found out that, majority (70%) of the Boarding schools spent within the set government fees limit while majority (76%) of the Day schools in this study spent beyond the set limit; there was a significant difference in unit cost between Boarding and Day secondary schools. ($t(121) = 31.516$, $p = 0.000$); The findings of this study will generate ideas for better and more ingenious cost management. To manage unit cost of secondary education, there is need to; appreciate the concept of cost unit cost, improve effectiveness of school management, effectively utilize monetary resource and practice prudence in financial management.
Keywords: Unit Cost, Day school, Boarding school, Type of Schools, Learners.

INTRODUCTION
BACKGROUND OF THE STUDY

The greatest bequest and effective instrument a nation can present to its youth is education [1, 2]. 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. Therefore massive financial and other resources going into education in most of the developing countries may be justified. Kenya's vision 2030, for the education sector, is to have globally competitive quality education, training and research. 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 [1]. The guiding principle is that education to be run as a business-like model where we keep a keen eye on cost as we seek to maximize returns.

Resource inputs have a very important role in the education process. Students' achievements are collective of the present and the previous educational resource inputs [3]. Coombs [4] 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. Longe [3] 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, Ministry of Education Science and Technology (MoEST) [5] 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 [6] 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.

According to MoEST [7], a taskforce report on financing of secondary schools in Kenya made recommendations on realistic unit cost of secondary education; in this arrangement, the government will 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 [7]. According to Economic survey 2016, at the National level, 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, was on an upward trend.

Table-1: Total Expenditure for the Ministry of Education for the period 2010/11 to 2015/16. Ksh. in millions

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

Source: Economic Survey 2016

From Table-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.

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) [3, 8]. KIPPRA [9] 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 different was unit cost in Day and Boarding secondary schools.

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 create a conducive school environment which affects 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 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 [10].

The purpose of this study was to determine

unit cost of Day and Boarding secondary schools in Nandi County, Kenya. This study was set to achieve the following specific objectives:

- To establish variable cost of Day and Boarding secondary schools in Nandi County, Kenya.
- Determine unit cost of Day and Boarding secondary schools in Nandi County, Kenya.
- To compare unit cost and government fees limits for each of the school types
- To establish the difference in unit cost of Day and Boarding secondary schools in Nandi County, Kenya.

This study tested the following hypothesis:

HO$_1$: There is no statistically significant difference in Unit costs of Boarding and Day secondary schools in Nandi County, Kenya.

Unit cost analysis is important for cost-benefit and cost-effectiveness analysis [11]. 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 [12]. In general, the study contributes significantly to decision-making, planning and monitoring cost in secondary education. The underlying reason for this study was the fact that the budgetary allocation to education sector has been increasing in the recent past [13]. 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 [14]. How much does it cost to educate one learner in a year in each of the school types? This study was delimited to public secondary schools in Nandi County, Kenya. The study dealt with Unit cost 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.

This study was guided by Cost Function derived from the Education Production Function theory. Psacharopoulos and Woodhall [15] put forward that Production Function Theory considers production as the process that transforms inputs into outputs. Koutsoyiannis [16] states that the Cost Function is derived from the production function. The total cost for a school process include 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 [17].

MATERIALS AND METHODS

The study was conducted in Nandi County of Kenya. Nandi County is in North Rift of Kenya, Given the county's fertility rates standing at 4.0, increasing population is likely raise the demand for places at all levels of education [18]. 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. This study employed a mixed method design which is an approach that associates both qualitative and quantitative forms [19]. 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 [20]. 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 [21]. 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 [22]. Target population refers to an entire group of individuals, events or objects having a common observable characteristic [23, 24]. 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 [25]. 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.

In this study, the sample size was determined by use of the published table by Krejcie and Morgan [26] (appendix 9). Krejcie and Morgan [26] presented sample sizes that would be required for a given permutation of accuracy and assurance levels. The table was therefore suitable in 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 [26], a population of 186 secondary schools yielded a sample of 123 secondary schools. Table-2 below, shows the type, the

target population and the sample size of the secondary

schools in Nandi County.

Table-2: Target Population and Sample

Type of School	Population	Sample
Day Secondary Schools	141	93
Boarding Secondary Schools	45	30
Totals	**186**	**123**

Source; Researcher (2015)

Table-2 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. Stratified random sampling was adopted to identify the sample. Therefore, the sample size for each of the school type was identified. 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.

This study used both questionnaire and document analysis as tools of data collection so has to grant a comfortable base for data analysis. These instruments were constructed based on the objectives of this study. This study used both closed and open ended questionnaire. According to Kothari [27] questionnaire method of data collection is at the heart of a survey process. This instrument was also cost effective and could enable easy coding and analysis of information collected [28]. The instrument was 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, Open ended questions were considered appropriate because they permitted a greater depth of response and enables respondents to give an insight into their decisions. Although the questionnaire yielded more quantitative data, useful qualitative data was also captured. 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 [29]. 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 [30]. Document analysis is an important research tool and is an invaluable way of triangulation, it helps seek convergence and corroboration thus breeds credibility and reduce the impact of potential bias [31]. Whereas, according to Creswell [32] 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 fees guidelines from the MoEST, school fees structures, school financial statements; these documents were found complete, in correct form and adequate. Other documents included circulars from the Ministry of Education on the free Day Secondary Education that indicated the allocation of the funds into the different vote heads of the secondary schools. These documents were analyzed for information relevant to this study.

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. According to Creswell [33] reliability is a measure of the extent to which instrument give a consistent results or data after repeated trials. It refers to the extent to which a test is internally consistent [32]. The reliability of the questionnaire and document analysis which were the instruments for this study was tested through a pilot study which was carried out in Uasin-gishu County. This study therefore borrowed from the advises of Shaughnessy, Zechmester and Zechmester [34], who posit that a pilot study may be carried out in a location that does not form part of the main research. In the pilot study test-retest technique was used in determining the reliability. 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 [33] a reliability coefficient of 0.7 and above is good to allow the study to be done.

The analysis of quantitative data collected in this study employed descriptive statistics so as to generate percentages, range and means. The null hypothesis (HO_1) 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. 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 [33]. According to Lee [35] 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; informed consent was obtained, all the respondents remain anonymous and confidentiality of the information was assured even up to the level of publication of the findings.

RESULTS AND DISCUSSIONS

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 3 below shows the types of sampled school in Nandi County.

Table-3: The Types of Sampled School

Type of Sampled School	Frequencies	Percentage
Boarding Schools	30	24.7
Day Schools	91	75.2
Total	**121**	**100**

N=121

Table-3 above shows that majority 91 (75.2%) of the schools sampled in this study were Day schools. There were thirty Boarding schools representing 24. 7% 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). Students who are in Boarding schools have more learning time than those students who attend Day schools. However Boarders pay more to cater for their boarding cost.

Enrolment in Secondary Schools Sampled

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 below.

Table-4: Enrolment Based on the Type of Schools (2012-2015)

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

From Table-4 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 majority 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 [10]. Increase in the number of learners means access is improving. However this increase has a cost implication to the state. 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 give the need to have optimal class size which is always issues of consideration in an attempt to have effective utilization of resource inputs in a school system. Number of learners enrolled in a school and more so class size are consider in analyzing efficiency and effectiveness of a school. Hanushek [13]; Kosgei and Rono [36]; Ngetich *et al*., [4] made 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 [12] found out that instructional expenditures per pupil 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.

Determination of Variable 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-5.

Table-5: Yearly Variable Cost for the Period 2012-2015

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

From Table-5 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 billionin 2015. Although 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 [9] which aptly puts that, in an attempt to establish Unit Cost, analysis of recurrent expenditure (variable cost) and enrolment is important. This section therefore identifies variable cost (yearly expenditure) and taking into consideration student enrolment, establishes Unit Cost for the various school types.

Determination of Unit Cost

Table-6 below, analyses unit cost for the period 2012-2015 in the two types of schools.

Table-6: Unit cost for the Two Types of Schools for the period 2012-2015.

Type of School	2012	2013	2014	2015	Average
Day Schools	21,605	19,658	22,595	25,194	22,263
Boarding Schools	48,506	46,680	58,950	65,177	54,828

Table-6 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 the 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 form 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 2012-2015.

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. This study agrees with the findings of a study by Munda and Odebero [37] 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 [38] who in their study on improving educational productivity and school finance noted that, different levels of cost per student in different school type 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, determines 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.

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 fees guidelines issued by the government through MoEST. The result of this analysis is tabulated in Table-7 that follows.

Table 7: Unit Cost and Government Fees Guidelines in the School Types

School Type	Average Unit Cost	Government Fees Limit	Number of Schools Beyond the Limit	Number of Schools Within the Limit
Boarding schools	54,828	66,424	9 (30%)	21 (70%)
Day schools	22,263	22,244	69 (76%)	22 (24%)

Table-7 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 governmental 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 set limit while only 22 (24%) spent within the set limit.

Given the high number of Day schools spending beyond the set limit in the fees guidelines, it can be argued that the idea of fees 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 that a guideline be issue on how much should be spent 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 question of the effectiveness of this fees guidelines. According to the MoEST [7] 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 [39] 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 [40] noted that, even with huge government allocation for secondary education, secondary schools are finding it a difficulty

to meet expenditure of some vote heads such as personal emoluments. And 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 [41]. This could therefore explain why according to this study, some school spent way beyond the limit while others introduced additional areas of spending such as development, academic, PTA.

Although some school 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 [42] 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 heads areas such as laboratory equipment, tuition fees and stationary, teaching materials, continuous examinations, electricity, water, conservancies and students' activities.

Testing the Hypothesis (HO$_1$)

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 schools and 91 Day 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 can 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:

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-8.

Table-8: Independent Samples Test for Testing HO$_1$

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
unit cost	Equal variances assumed	20.456	.000	31.52	121	.000	37177.38925	1179.6464	34841.9678	39512.8106
	Equal variances not assumed			21.29	32.091	.000	37177.38925	1746.1221	33621.0500	40733.7284

The output in Table-8 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 [43, 44]. More drastic measures as suggested by IPAR [45] which recommends the abolition of public Boarding secondary schools in Kenya. This are part of the cost reduction strategies aimed at improving access, quality education and effective retention of learners in school and above all improve learner outcomes. Such strategies are supported by the findings of this study that; unit cost for Boarding schools was higher than unit cost for Day schools.

SUMMARY OF THE FINDINGS

Emanating from this study, 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 billionin 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. There was a huge range between a school which spent on average the highest per student (unit cost) 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 and at the same time total cost is linked to resource inputs. Given the government set limit for each category of schools, the findings of this study was that Majority (70%) of the Boarding schools spent within the set governmental 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 fees guidelines for Day schools. It is also noticeable that all Day schools have introduced a vote head on meals which mainly caters for lunch program. This makes it indispensable that a guideline be issue 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 fees guidelines. Furthermore the study found out that there was a significant difference in unit cost between Boarding and Day secondary schools in Nandi County ($t(121) = 31.516$, $p = 0.000$).

Based on the findings of this study, the following recommendations were made; there is need to priorities expenditure so that there is appropriate allocation of financial and other resources for acquisition of teaching and learning resources and thus enhance learner achievements, education stakeholders need to appreciate the attempt by ministry of education to focus on the cost 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. Further research need be done; research of this nature be carried out on a larger population in several Counties or Nationally, a study on the factors which lead to the variation in unit cost need to be done. A study on predictive strength and direction of other factors other than unit cost affecting learner achievements in secondary schools can also be done.

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