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Optimal Pricing for Quality Education in Public Sub-county Secondary Schools in Busia County, Kenya

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Abstract: *The government pricing guidelines has led to upsurge of enrolment in various secondary schools. This has fueled congestions in the classrooms and laboratories. Further, it has become difficult for teachers to offer individualized instruction due to chronic teacher shortages as the available ones deal with bloated classes. This has further interfered with assessment processes, which therefore, affects quality of education. For a county like Busia, with high poverty index of 69.3%, there could be challenges of resourcing schools for quality attainment. The purpose of this study was to determine the pricing guidelines that ensure optimal price for quality education in sub-county public secondary schools in Kenya. Stratified random sampling was used to select 60 schools out of 114, and purposive sampling to select 7 Sub County Directors of education, for the study. Questionnaires for principals, interview schedule for sub county directors of education; observation checklist and document analysis guide were used to collect data. The researchers pre-tested the instruments through a pilot study using 10 schools in the study population and obtained a reliability of 0.8 for Principals' questionnaire. Quantitative data was analyzed using both descriptive and inferential statistics involving percentages, mean scores and multiple linear regressions. The pricing guidelines did not avail optimal price for quality education, thus for quality to be attained day scholars should be charged sh.48843 and boarders' sh.65843. This study might help education economists and planners to come up with effective methods of pricing secondary education for quality purposes.*

Keywords: *Optimal, Pricing, Guidelines, Fee, Implications, Quality Education*

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1. Introduction

Secondary education is increasingly being recognized as a critical element in achieving the goals of human development, political stability and economic competitiveness (UNESCO 2018). As an intermediary step between primary and tertiary education, secondary education serves as a preparatory phase for youth before they enter the workplace, helping to equip a largely adolescent population with skills, aptitudes and social values for a productive and healthy adult life. Moreover, in countries where UPE has been reached, a bulging cohort of primary school learners is placing increasing demands on the education sector to expand secondary education provision. Nonetheless, countries face enormous challenges when planning, pricing and resourcing secondary education expansion because it is many times more costly and complex than primary education (Lewin 2008).

Obadara, Alaka and Abayomi (2010) while doing a study on Influence of Resource Allocation in Education on Secondary School Students Outcome in Nigeria observed that education had been in crisis for many years, much of the difficulty lied in the fact that the sector was poorly

funded. This resulted in shortages of material and human resources experienced in the system: lack of qualified teachers; high turnover rate of teachers; shortage of classrooms, and a host of other problems. These difficulties had been most pronounced at secondary schools level and affected to greater extent quality of education.

The Constitution of Kenya (2010) makes education a basic right under the Bill of Rights where basic education is guaranteed for all children and the state is obliged to make its provision possible. According to Sessional Paper No.1.of 2019, the broad objectives of education sector interventions are to achieve hundred percent net secondary school enrolment rates and ensure quality of education.

Ngetich, Wambua, and Kosgei (2014) in their study "Determination of Unit Cost among Secondary Schools in Kenya: A case of Nandi North District" observed that despite the fees guidelines issued by the Ministry of Education, schools have continued to ignore government policies on education costs. This position is supported by a report presented to Education Cabinet Secretary in February 2019 by Kenya Secondary Schools Heads Association (KESSHA), which revealed that the public secondary schools are underfunded citing huge budget deficits and proposed that secondary fee structure should be reviewed. This is further supported by Makori , Chepchieng, Misoi,and Kiplagat (2016) in their study "Secondary schools in a county in Kenya seem to be taking advantage of the cost sharing guidelines: understanding its practice and implications" averred that levels of fee payments and the entry items requirements were the two main challenges that most parents face as they attempt to support their children educationally. Thus, they recommended that the government should increase subsidy to schools and introduce subsidy on the entry items requirement. They observed that the two factors deny students opportunities to join secondary schools with a positive teaching-learning environment. These studies are however, silent on the amount of subsidy that the government needs to add. This is despite the government's effort of implementing Kilemi Mwiria report of free day secondary education and its commitment to allocating more resources to schools yearly as in Table 1.

Table1: Expenditure at secondary school level for the Ministry of Education 2015/16 – 2020/2021 in Ksh million

Financial Year	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Reccurent	57519.21	54977.03	83922.18	87966.70	89846.99	89128.76
Development	5258.23	8188.86	9064.74	7462.33	8378.88	12770.00
Total	62777.44	63165.89	92986.92	95429.03	98225.87	101898.76

Economic Survey 2021

Despite this annual increase in education expenditure, principals of secondary schools have constantly complained of running into financial crisis with huge budget deficit citing a big gap of the financial resources available to schools verses the expenditures incurred. Gogo (2012) underscored the importance of continuous review of financing secondary education with proper cost sharing guidelines between parents and the government taking into account the changing economics dynamics like inflation. According to Kenya Bureau of Standards (KNBS, 2022), Kenya experienced the highest inflation rate in the month of July 2022 at 8.22, June 7.91, May 7.08, April 6.47, March 5.56, February 5.08, January 5.39. Therefore, the average annual inflation rate was at 6.45; in 2021, the average inflation was 6.1; 2020, 5.4 and 2019 5.3. The ever-changing inflation rate has implications on the consumer price indices which has dire consequences on the households with low socio-economic status such as in Busia County with poverty index of 69.3%. Moreover, the performance of secondary schools in Busia County in the national examinations has been declining for the past three consecutive years below the national mean scores. Further, Busia County school quality indicators such as Learner Classroom Ratio (LCR), Student Teacher Ratio (STR), School Size and Kenya Certificate of Secondary Education (KCSE) performance were compared with the national average and the neighbouring counties. It revealed that the National Average was 3.96 in 2018, 4.30 in 2019 and 4.53 in 2020 with Busia County having an average of 3.80 in 2018, 3.68 in 2019 and 3.51 in 2020; Kakamega county registering a mean of 4.2 in 2018, 4.33 in 2019 and 4.80 in 2020 ; Bungoma county having 3.97 in 2018, 4.01 in 2019 and 4.46 in 2020; Vihiga county had 4.14 in 2018, 4.58 in 2019 and 4.67 in 2020. This data showed that Busia County performed worst in the quality indicators so discussed as compared to the National and the neighbouring Counties. This study thus sought to determine the price guidelines that may result to optimal price for the operation of sub county secondary schools in Busia County with a view to addressing quality of education.

1.1Statement of the Problem

The government pricing guidelines sent to schools from time to time are meant to ensure that schools are endowed with financial resources with which to purchase school resources for their efficient operations to realize quality of education. Busia county has registered the lowest academic performance in Kenya Certificate of Secondary Education (KCSE) for the past three consecutive years, 2018 was 3.80, 2019 was 3.68, 2020 was 3.51 compared with the neighbouring counties with the its sub county schools category not only performing the poorest but also declining overtime; 2018 was 3.24, 2019 was2.96, 2020 was2.72. Kenya National Association of parents has continuously complained to the government about parents who are charged extra levies from the schools. Therefore, secondary education pricing is characterized with fees guidelines and cost sharing programmes which may not avail optimal resources for the purposes of quality of education.

1.2 Objectives of the study

The objective of this study is to determine whether the pricing guidelines ensure optimal pricing for quality education in public sub-county secondary schools in Busia County, Kenya.

2. Literature Review

World Bank (2019) observed that developing countries are investing heavily in their education systems and providing their children and youth with unprecedented levels of access to education without attaining the intended goals of education. It advised that achieving national education goals would require additional financial commitments over the years.

UNESCO (2012) indicated that the big challenge for secondary education in Latin American and East Asian countries in the context of increased primary school enrollment rates, which puts pressure on increased resources as demand for secondary education increases. The major challenges that these countries are encountering are inadequate resource allocations, constraints of expansion and increasing the quality of secondary education. World Bank (2005) described secondary education as the crucial link between primary schooling, tertiary education, and the labour market. Nearly all countries in Sub Saharan Africa have implemented policies to ensure free universal primary education particularly through waiver of direct costs to households. This has resulted in an increase in enrollment and completion rates and has brought increased demand for access to secondary education. With the increased enrollment in secondary schools, African countries must deal with issues of funding, quality learning and relevance of teaching and learning.

Kenya's Vision 2030 is the country's new development blue print; it aims to transform Kenya into a newly industrialized country by the year 2030. The Vision is based on three pillars: the economic, the social and the political. The policies of the first and second pillars are equally anchored on an all-round adoption of education as an implementation tool. One of the key areas in realizing vision 2030 is quality education and training. Improved secondary education is fundamental to the creation of effective human capital in any country. The launch of Free Day Secondary Education (FDSE) in 2008 was initiated to promote pupil transition from primary to secondary schools, and retention and completion in secondary schools without discrimination. Government intended to remove major obstacles that have stood in the way of children who need to join and complete secondary education (Republic of Kenya, (2005).

The government of Kenya, through Sessional Paper No.1 of 2005, made a commitment to increase transition from primary to secondary school from 49 to 70% by the year 2010. This would be made possible by the government supplementing parents' efforts in meeting education costs at secondary level. The government supported the poor and needy students through bursaries. Further, tuition free secondary education policy was implemented in 2008 with the government's commitment to pay tuition fees for all students enrolled at secondary level. With the government efforts, transition rate to secondary level of education has since increased from 59.6% in 2007 to 90% in 2019. Implementation of Subsidized Secondary Education (SSE) in Kenya was a major step in expanding access to education to majority of students from poor background. This was further reinforced by the international agreement on Education for All. The government provided subsidies towards funding SSE, however there were other costs that were not catered for by SSE but were to be catered for by the parents. Concerns have however been raised over effective implementation of this programme, and the impact of SSE on quality learning in sub county secondary schools following structural factors including inadequate and delayed disbursement of subsidies to school, shortage of human resources, limited physical and instructional resources.

A report presented to Education Cabinet secretary in February 2019 by KESSHA revealed that the public secondary schools are underfunded citing huge budget deficits and proposed that secondary fee structure should be reviewed. In addition, the report unearthed congestion in classrooms, dormitories, hall, laboratories, school fields

and washrooms amidst chronic shortage of teachers, which threaten to further lower the quality of learning. This is despite the government's effort of implementing Kilemi Mwiria report of free day secondary education and its commitment to allocating more resources to schools yearly.

Despite this, principals have constantly complained of running into financial crisis with huge budget deficit citing a big gap of the financial resources available to schools verses the expenditures incurred. The question is, what is the optimum price in form of fee that should be paid by parents and what are some of the factors to consider when arriving at this price?

Ayodo (2016) in his study "Effects of hidden costs on Free Secondary Education on transition and completion rates in public boarding schools in Kisii County, Kenya" found out that there was a significant relationship between hidden costs and students transition and completion rates. This implies that though the introduction of FSE programmes has greatly reduced the financial burden of public secondary school going students, parents still incur some hidden costs like remedial, upload of students details in KNEC portal, trips, payment of BOM teachers, which negatively impacts on transition and completion rates. The study recommended that the government should increase allocation to school to ease the parent's burden but did not indicate by how much.

Ngetich et al, (2014) in their study "Determination of Unit Cost among Secondary Schools in Kenya: a case of Nandi North District" observed that despite the fees guidelines by the Ministry of Education, schools have continued to ignore government policies on education costs. This may make the cost incurred by parents to remain unchanged, watering down the Government's effort to make secondary education affordable.

Genevieve et al (2017) in their study titled "Does Free Education Promote Equity in Public Secondary Schools in Kenya" observed that in as much as the government is trying to promote equity by giving equivalent amount of money of Ksh. 22244 to every child who is in secondary school, the money is not adequate to sustain a child in secondary school thus schools compel parents to pay additional fee in form of motivation, development, KCSE registration (upload of details), photocopying papers, trips among other payment which varies in amount from one school to the other. The study further indicated that there is huge variance between the amount of money that the government budgets for secondary education and the cost incurred by the parents to educate their children.

Makori et al, (2016) in their study "Secondary schools in a county in Kenya seem to be taking advantage of the cost sharing guidelines: understanding its practice and implications" averred that levels of fee payments and the entry items requirements are the two most challenges that parents face as they attempt to support their children educationally. Thus, they recommended that the government should increase subsidy to schools and introduce subsidy on the entry items requirement. They observed that the two factors negatively affect access to education in public secondary schools in the country. They also deny students opportunities to join secondary schools with a positive teaching-learning environment. This study was however silent on the amount of subsidy that the government needed to add neither on entry requirements. Maiyo (Chairperson of Parents Association) as reported in the Star Newspaper of 3rd January 2018, advised parents to resist illegal fees introduced by rogue principals which were in form of motivation, books, PTA levies, remedial, uniform, trips among others. This is an indicator that there are some elements of insufficiency in the current pricing levels of these schools to cater for all the intended services.

In response to the government guidelines of 100% transition rate from primary to secondary as reported in Daily Newspaper of February 24th, 2019, the head teachers gave the government red alert on compromising the quality of education further if they do not review the current methods of pricing the secondary education claiming that it is grossly inadequate. However, the ministry of education insisted that the fees are sufficient. Gogo (2012) underscored the importance of continuous review of financing secondary education with proper cost sharing guidelines between parents and the government considering the changing economics dynamics like inflation. According to Kenya Bureau of Standards (KNBS, 2022), Kenya experienced the highest inflation rate in the month of July 2022 at 8.22, June 7.91, May 7.08, April 6.47, March 5.56, February 5.08, January 5.39. Therefore, the average annual inflation rate was at 6.45; in 2021, the average inflation was 6.1; 2020, 5.4 and 2019 5.3. The ever-changing inflation rate has implications on the consumer price indices which has dire consequences on the households with low socio-economic status such as in Busia County with poverty index of 69.3%. This study seeks to determine the price guidelines that may result to optimal price for the operation of sub county secondary schools in Busia County with a view to addressing quality of education.

From the aforementioned, there is a mismatch of the methods of pricing secondary education and expenditure realities in schools verses the income to schools. It therefore calls for the examination of the current pricing methods used in schools with a view to address the highlighted gaps.

3. Methodology

3.1 Research Design

Descriptive survey research was employed because it gives factual information, objective or neutrality of information collected.

In addition to the descriptive survey, the study employed correlational research design. The correlational research design is a research design in which the researcher seeks to describe and measure the degree of association between an independent and dependent variable (Creswell, 2012).

3.2 Target Population

The target population was the public sub county secondary schools in Busia County with 114 schools in 7 sub counties. Sub County Schools in Kenya form the lowest cadre of secondary schools; after National, Extra County schools and County Schools. The schools admit students from majorly within the Sub country, from the immediate locality. The schools are majorly of mixed type; though there are a few single sex schools. Students joining these schools are mostly those with the low marks in the Kenya Certificate of Primary Education Examination (KCPE). The schools are in most cases Day Schools, though some are Day and Boarding Schools.

3.3 Sampling Techniques and Sample Size

The study used stratified random sampling to select and distribute 60 school heads from a population of 114 school heads. Saturated sampling was used to sample all the 7 sub county Directors of Education. The sampled schools resulted to 60 principals and seven sub county directors of education who provided data for this study. Stratified random sampling is a probability sampling technique in which strata or categories of people in the population is represented in the sampling process (Mathers, Fox, & Hunn, 2010). This technique of sampling is used in population that is heterogeneous in respect to the characteristics of interest. In this case, the population is composed of groups or sub populations that have distinct characteristics which are of interest to the researcher or have capacity to influence study results (Kutsanedzie et al., 2016). The strata included the various sub counties in Busia County. Nassiuma's Coefficient of Variation Sampling Formula was used to obtain samples from each stratum which summed to 60 schools (52.63% of the target population) from a sampling frame of 114 schools as illustrated below.

$$n = \frac{NC^2}{C^2+(N-1)e^2}$$ where.

n - Sample size
N – Size of Target Population
C – coefficient of variation
e – error of margin

Coefficient of variation is the population standard deviation divided by population means (Kelley, 2007). The coefficient of variation of 0.5 was used because the maximum variability that can be observed in a population is 50% (Israel, 1992). At 50% there is equality in representation between population members with attributes of interest and those without. The margin of error, also referred to as margin of precision, refers to a measure of the possible difference between sample estimate and actual population value (National Audit Office, 2010). In Social Sciences, 5% is often used as the margin of error. Therefore, this study used 5% as the margin of error in calculating sample size.

3.4 Research Instruments

This study used questionnaires and document analysis guide to gather information from principals, interview schedule for sub-county director of education and document analysis guide to obtain information from County director of education office. Moreover, observation checklist was used on infrastructure.

3.5 Validity

Face and content validity were examined by experts in planning and economics of education in Maseno University. They carefully evaluated and critiqued content of the instruments to establish their soundness in collecting data for the proposed study. They also ascertained the comprehensiveness of the instruments in addressing the research objectives and questions. Liu, X. (2010), states that, the foregoing approach acts as a check against any ambiguity or inadequacy that the instruments might have. Their suggestions were considered in making the necessary revisions on the final version of the instrument that was used to collect data.

3.6 Reliability

A pilot study involving 10 principals which represents 10% was conveniently sampled from the study population to test the reliability of the instruments. Test-retest method (administering the same instrument twice to the same group of subjects (Mugenda and Mugenda, 2008) was used in the study to measure the reliability of the instruments. Test-retest assesses the stability of the test scores over time. Paiva et al., (2014) define test-retest

reliability as a measure of the reproducibility of the scale, that is, the ability to provide consistent scores over time in a stable population. The open-ended questionnaires were scored based on the closeness and similarity of the responses emanating from first and second administrations. Pearson's Correlation coefficient was used to test for similarity or closeness. Pearson's Correlation coefficient of 0.80 obtained from principals' questionnaire was considered adequate to illustrate reliability (Hale, 2015). Unclear or vague questions were revised accordingly.

3.7 Methods of Data Analysis

The refined and organized quantitative data was analyzed using descriptive and inferential statistics involving percentages, mean scores and correlation. According to Hair et al (2010), this statistical approach is essential when finding a way of condensing the information contained in a number of original variables into a smaller set of factors with a minimum loss of information. The statistics was generated with aid of the computer software, Statistical Package for Social Sciences (SPSS) Version 20.0.

Qualitative data was analyzed using content analysis procedure, whereby the pool of diverse responses was reduced to a handful of key issues in a reliable manner. This was achieved through a stepwise process that involves two broad phases: firstly, taking each person's response in turn and marking in them any distinct content elements, substantive statements, or key points; and secondly, forming broader categories to describe the content of the response in a way that allows for comparisons with other responses. The categories obtained in second phase were numerically coded entered into the data file to be treated as quantitative data.

4. Results and Discussion

4.1 Fee charged annually by schools

The study posed a question to the principals "Apart from the Free Day Secondary Education (FDSE) capitation, how much fee does your school charge annually?" The responses were tabulated in Table 2.

Table 2: Fee Paid to Schools by Parents and the Government Subsidy

Fee paid by Parents	Cumulative Fee by Parents and Government (Ksh.22244)	Frequency	Percent
24644	46888	1	1.7
25077	47321	13	21.7
28544	50788	1	1.7
28777	51021	7	11.7
29044	51288	2	3.3
29544	51788	4	6.7
29713	51957	1	1.7
29777	52021	1	1.7
29844	52088	1	1.7
30044	52288	8	13.3
30077	52321	1	1.7
31044	53288	2	1.7
31544	53788	2	3.3
34277	56521	3	1.7
34544	56788	4	6.7
35244	57488	3	5.0
38150	60394	3	5.0
50107	72351	3	1.7
Total		60	100.0

From the data gathered from schools, the lowest fee paid by parents was at Ksh.24644 with a cumulative amount of Ksh.46888, 13(21.7%) charged parents Ksh.25077 resulting to cumulative total of Ksh. 47 321; 8(13.3%) charged parents Ksh.30044 resulting to a cumulative total of Ksh.52288; 7(11.7%) schools charged parents Ksh.28777 resulting to a cumulative total of Ksh.51021. 3(5%) schools charged parents Ksh. 50107 bringing a cumulative total of Ksh.72351.

It was noted that the fee paid by parents were far much above the government fee ceilings for Sub county schools as stipulated in the Fee guidelines. This was due to the fact that some sub county schools also operated boarding units therefore charged the boarding fee; development fund which were agreed upon by parents of individual institutions, extra levies inform of examination fee, remedial fee, payment of BOM teachers, caution money, Bus funds, reams of photocopying papers, registration of KCSE candidates data in the KNEC portal, registration of learners in the NEMIS. These inflated the fee charged by schools above the government stipulated fee guidelines. Most of these funds were not included in the official fee structure of the various schools but were expressed in the income expenditure accounts. Therefore the amount paid by parents from school to school varied above the government guidelines and parents defied paying some levies which made the institutions to have high sundry debtors beyond 50% each year.

4.2 Sufficiency of Cumulative Funds (Fee and FDSE) in running the schools

Principals were requested in the questionnaire to indicate if the amount of money collected in form of fee and FSE were sufficient to run the school in a year and all the 60(100%) principals indicated that the funds were not sufficient to run the schools effectively in a year and realize quality education.

The principals were further required to offer an explanation as to why they indicated that the amount received from both parents and students were inadequate and the responses are presented in Table 3.

Table 3: Explanation on whether the fee and FSE collected in a school is adequate to run the school annually

Explanation	Frequency	Percent
• Charge on parents is too low to cater for the school's needs	2	3.3
• Cost of living has gone up while funding to schools has remained constant overtime	2	3.3
• Expenditure surpasses the income	17	28.3
• Fee payment of below 50%	17	28.3
• Inflation	22	36.7
Total	60	100.0

From Table 3, 22(36.7%) principals alluded to the ever rising inflation as the reason why the funds were not sufficient to run the schools for a year; 17(28.3%) principals indicated that the fee payment by parents was too low (below 50%) and the government retained funds on some vote heads (books, activity, medical insurance) resulting to schools receiving Ksh.14600 from Ksh.22244; 17(28.3%) principals indicated that their expenditures surpassed the income resulting to huge debts owed to sundry creditors; 2(3.3%) principals gave out an explanation that the Cost of living has gone up while funding to schools has remained constant overtime and 2(3.3%) principals indicated that the Charge on parents is too low to cater for the school's needs.

4.3 Allocation and expenditure per vote head

The principals were asked to respond to how the money received in schools were allocated and spent and the deficit realized per vote head. The response showed that most schools allocated sh.4144 to tuition, sh. 5000 to Repair, Maintenance and Improvement (RMI), Ksh. 10000 to lunch, sh.5000 to development, sh. 1890 to Local Transport and Travel (LTT), 890 for administrative costs, sh. 1500 for activity and the Boarding, Equipment and Stores (BES) ranged from 5200 to sh. 35000.This was further analyzed using descriptive statistics and presented in Table 4.

Table 4: Summary of the allocations per vote head

Vote head	N	Minimum	Maximum	Mean	Std. Deviation
Tuition Vote head	60	4144	4644	4163.47	90.822
Boarding Equipment and Stores (BES)	60	0	35000	3724.83	8810.052
Repairs, Maintenance and Improvement (RMI)	60	600	6000	4183.33	2002.809
Local Transport and Travel (LTT)	60	529	2000	1517.37	452.499
Administration	60	808	2000	1220.40	469.731
Electricity, Water and Contingency (EWC)	60	500	2151	1002.38	411.823
Activity	60	500	1550	1478.33	184.429
Personal Emolument (PE)	60	1500	5755	4600.22	957.044
Lunch	60	0	13000	9850.00	1505.076
Development	60	0	5000	788.33	1595.023

From Table 4, schools allocated and spent a minimum of Ksh. 4144 and a maximum of Ksh.4644 resulting to a mean allocation of sh.4163 with a standard deviation of sh.90.80. Boarding Equipment and Stores (BES), the minimum allocation was sh.0 for day schools and a maximum allocation of sh.35000 for boarders in sub county schools resulting to a mean allocation of sh.3724.80 with a standard deviation of sh.8810. For RMI, schools allocated a minimum of sh.600 and a maximum of sh.6000 giving a mean of sh. 4183.30 and a standard deviation of sh.2002.90. For LTT, Schools allocated a minimum of sh.529 and a maximum of sh.2000 with a mean of sh.1517 and standard deviation of sh.452.50. For administration costs, the schools allocated a minimum of sh. 808 and a maximum of sh.2000 with a mean of 1220.40 and a standard deviation of 469.70. For EWC, schools allocated a minimum of sh.500 and a maximum of sh.2151 with a mean of sh.1002.40 and standard deviation of sh.411.80. For activity, the schools allocated a minimum of sh.500 and a maximum of sh.1550 with a mean of sh.1478.30 and a standard deviation of sh. 184.40. For Personal Emolument (PE), the schools allocated a minimum of sh.1500 and a maximum of sh.5755 with a mean of sh.4600.20 and a standard deviation of sh.957. For lunch, boarding schools did not charge therefore allocated sh.0 while the maximum allocation was sh.13000 with a mean of sh. 9850 and standard deviation of sh.1505. For development, schools allocated a minimum of sh.0 for schools which did not levy the funds on the parents but those that did levied a maximum of sh. 5000 giving a mean of sh. 788.30 and standard deviation of sh.1595.

4.4 Adequacy of the various vote heads

The principals were asked to indicate whether the vote heads as allocated and provided for in the pricing guidelines were adequate and sufficient to cater for all the expenditures and services required of them. The responses are recorded in Table 5.

Table 5: Adequacy of the Various Vote heads

VOTEHEAD	NO		YES	
	Count	Percent	Count	Percent
Boarding Equipment and Stores (BES)	58	96.7	2	3.3
Repairs Maintenance and Improvement (RMI)	55	91.7	5	8.3
Local Transport and Travel (LTT)	58	96.7	2	3.3
Administration Costs	58	96.7	2	3.3
Electricity, Water and Contingency (EWC)	55	91.7	5	8.3
Activity	57	95.0	3	5.0
Personal Emolument (PE)	59	98.3	1	1.7
Lunch	57	95.0	3	5.0

According to Table 5, 58(96.7%) principals indicated that BES vote head is insufficient, 2(3.3%) indicated it was sufficient; 55(91.7%) principals responded that RMI funds were insufficient, 5(8,3%) indicated that it was sufficient. For LTT, 58(96.7%) indicated that it was inadequate whereas 2(3.3%) indicated that it was adequate. For Administrative Costs, 58(96.7%) principals indicated that it was inadequate, but 2(3.3%) principals indicated that it was adequate. For EWC, 55(91.7%) principals indicated that it was inadequate while 5(8.3%) showed that it was adequate. For activity vote head, 57(95%) principals indicated that it was inadequate but 3(5%) showed that it was adequate. For PE, 59(98.3%) indicated that it was inadequate while 1(1.7%) indicated that it was adequate. For Lunch funds, 57(95%) principals indicated that it was inadequate whereas 3(5%) principals indicated that it was adequate. Hence all the voteheads had inadequate funding.

4.5 Expenditures on various vote heads

Data on the expenditure per vote head was obtained from the school audit reports and school budgets sourced from the County School Audit (CSA) and various schools respectively. The average of expenditure from each vote head for 3 years was calculated and divided by the school enrolment for various years in order to obtain unit expenditure per student in the various vote heads. The data is presented in Table 6.

Table 6: Descriptive Statistics of Expenditures and Optimal Price Per Student

Expenditure on Vote head	N	Minimum	Maximum	Mean	Std. Deviation
Expenditure on Tuition	60	4144	9644	7580.13	1151.776
Expenditure on Boarding, Equipment and Stores	60	0	43000	5549.83	9938.794
Expenditures on Repairs Maintenance and Improvement	60	1300	9000	6150.00	2768.864
Expenditures on Local Transport and Travels	60	1129	4650	2335.70	714.228
Expenditures on Administrative Costs	60	1290	5000	1838.73	901.516
Expenditures on Electricity, Water and Contingency	60	700	2651	1443.93	442.356
Expenditure on Activity	60	1500	4550	2811.67	582.322
Expenditure on Personal Emolument	60	3500	11000	6483.55	1114.731
Expenditure on Lunch	60	0	17000	14825.00	2047.787
DEVELOPMENT	60	0	5000	788.33	1595.023
Optimal Price per Student	60	35577	98044	49696.20	12376.704

Table 6 indicated that schools spent minimum of Ksh.4144 and a maximum of Ksh.9644 with a mean of Ksh.7580 and a standard deviation of 1151.80 on Tuition vote head. Expenditure on Boarding, Equipment and Stores was at a minimum of Ksh.0 for pure day schools and a maximum of Ksh.43000 for boarders with a mean of Ksh.5549.80 and standard deviation of 9938.80. Expenditures on Repairs Maintenance and Improvement were at a minimum of Ksh.1300, maximum of Ksh.9000 with a mean of Ksh.6150 and standard deviation of 2768.90. Expenditures on Local Transport and Travels were at minimum of Ksh.1129, maximum of ksh.4650 with a mean of Ksh.2335.70 and standard deviation of 714.30. Expenditures on Administrative Costs were minimum at Ksh.1290 and maximum at Ksh. 5000 with a mean of Ksh.1838.70 and standard deviation of 901.60. Expenditures on Electricity, Water and Contingency was minimum at Ksh.700, maximum at Ksh.2651 with a mean of Ksh.1444 and standard deviation of 443. Expenditure on Activity was minimum at ksh. 1500, maximum at Ksh.4550 with a mean of Ksh. 2811.70 and standard deviation of 582.40. Expenditure on Personal Emolument was minimum at Ksh.3500, maximum at Ksh.11000 with a mean of Ksh.6483.60 and standard deviation of 1114.80. Expenditure on development ranged from Ksh.0 to Ksh. 5000 with a mean of 788.40 and standard deviation of 1595.10.

The above data generated an optimal price that should have been per student in order for the schools to operate optimally at Minimum of Ksh.35777, Maximum of Ksh.98044 with a mean of Ksh.49696.20 and a standard deviation of 12376.80. These descriptive statistics of the expenditures of each vote head was obtained through the analysis of case-by-case summaries of the vote heads. The summary helped in working out the optimal cost of operation for schools which was labelled as the optimal price per student.

4.6 Determination of Optimal Price Equation guidelines

The study sought to determine an equation that could be used from time to time to determine the price per learner that should be due to the institution. This was done by calculating a weighted price worked out from the averages of the expenditures from each vote head for 3 years which was then used to generate a multiple linear regression equation. The coefficients obtained from the linear regression equation was used to calculate the optimal price payable to the school by each student enrolled depending on the weight of each vote head.

Table 7: Multiple Linear Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.979[a]	.958	.949	2799.377

a. Predictors: (Constant), Development, Activity, Lunch, Tuition Vote head, Electricity, Water and Contingency, Administration, Repairs, Maintenance And Improvement, Boarding Equipment And Stores, Local Transport And Travel, Personal Emolument

The model summary as illustrated in Table7 indicated that, the various vote heads which constituted the pricing guidelines accounted for 95.8% of the fee paid to schools (R^2= 0.958) with standard error of the estimate at 2799.377. The remaining percentage of 0.042 (4.2%) were levies that schools received but were not categorized into the various vote heads. The value of different vote heads in optimal price determination is as presented in Table 8.

Table 8: Value of Vote heads in determination of optimal price

Value of Each Vote head	Mean	Std. Deviation
Total Fee to Schools Per Student (Day Scholars)	32528.67	9611.433
Total Fee to Schools Per Student (Boarders)	49696	12376.704
Tuition Vote head	4163.47	90.822
Boarding Equipment and Stores	3724.83	8810.052
Repairs, Maintenance and Improvement	4183.33	2002.809
Local Transport and Travel	1517.37	452.499
Administration	1220.40	469.731
Electricity, Water and Contingency	1002.38	411.823
Activity	1478.33	184.429
Personal Emolument	4600.22	957.044
Lunch	9850.00	1505.076
Development	788.33	1595.023

For the purpose of optimal price determination for Sub county Schools, Day scholars Regression equation had a constant of Ksh.32528.70, Boarders Ksh.49696, Tuition vote head Ksh.4163.50, BES Ksh.3724.80, RMI Ksh.4183.30, LTT Ksh.1517.40, Administration Ksh.1220.40, EWC Ksh.1002.40, Activity Ksh.1478.30, PE Ksh.4600.20, Lunch Ksh.9850 and Development Ksh.788.30. The weight of each vote head was obtained from the regression coefficient as shown in Table 9.

Table 9: Regression Coefficients of various vote heads

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)- Day Scholars	32528.70	.000		.	.
(Constant)- Boarders	49696	.000			
Tuition Vote head	1.000	.000	.220	.	.
Boarding Equipment and Stores	1.000	.000	.917	.	.
Repairs, Maintenance and Improvement	1.000	.000	.208	.	.
Local Transport and Travel	1.000	.000	.047	.	.
Administration	1.000	.000	.049	.	.
Electricity, Water and Contingency	1.000	.000	.043	.	.
Activity	1.000	.000	.019	.	.
Personal Emolument	1.000	.000	.100	.	.
Lunch	1.000	.000	.157	.	.
Development	1.000	.000	.166	.	.

a. Dependent Variable: Total Fee to Schools Per Student

The regression coefficients were obtained from the various weights of the vote heads calculated from the average expenditures in schools for the last 3 years and regressed with the total fee paid to the schools from both the government and parents. The regression coefficients as indicated in Table 4.36 revealed the following vote head weights: Tuition 0.220, BES 0.917, RMI 0.208, LTT 0.047, Administration 0.049, EWC 0.043, Activity 0.019, PE 0.100, Lunch 0.157, Development 0.166.

It is worth noting that the existing price guidelines to schools from MOE from time to time never considered the inflation rate. According to Kenya Bureau of Standards (KNBS, 2022), Kenya experienced the highest inflation rate in the month of July 2022 at 8.22, June 7.91, May 7.08, April 6.47, March 5.56, February 5.08, January 5.39. Therefore, the average annual inflation rate was at 6.45. Gogo (2012) asserted that in determination of fee paid to schools like, inflation should be taken into account therefore fees should be revised from time to time to take care of the inflation.

Hence considering the various weights of each vote head and the existing rate of inflation, the optimal price for sub county schools (day scholars and boarders) were determined from the multiple linear regression coefficients as in Table 9.

Optimal Price (Day Scholars): $\boldsymbol{y = 325280 + 22x_1 + 0.917x_2 + 0.208x_3 + 0.047x_4 + 0.049x_5 + 0.043x_6 + 0.019x_7 + 0.1x_8 + 0.157x_9 + 0.166x_{10} + \beta}$

Optimal Price (Boarders): $\boldsymbol{y = 496960 + 22x_1 + 0.917x_2 + 0.208x_3 + 0.047x_4 + 0.049x_5 + 0.043x_6 + 0.019x_7 + 0.1x_8 + 0.157x_9 + 0.166x_{10} + \beta}$

Where; $\boldsymbol{x_1}$ = Tuition votehead; $\boldsymbol{x_2}$= BES; $\boldsymbol{x_3}$= RMI; $\boldsymbol{x_4}$ = LTT; $\boldsymbol{x_5}$=Administration; $\boldsymbol{x_6}$= EWC; $\boldsymbol{x_7}$ = Activity; $\boldsymbol{x_8}$ = PE ; $\boldsymbol{x_9}$ = Lunch; $\boldsymbol{x_{10}}$ = Development $\boldsymbol{\beta}$ = Inflation at 0.0645 equivalent to 6.45% of the prevailing dollar to Ksh. Exchange rate fixed at the highest exchange rate as at August 2022 of 1$ =Ksh.119.20

Hence in order for optimal price operations as illustrated in the multiple linear regression equations so determined, the public sub county secondary schools should charge

price per student as follows; Day scholars, Ksh. 48,843; Boarders Ksh. 65843. These amounts included both the government capitation and the parents' contributions.

5. Conclusion and Recommendations

5.1 Conclusion

The fee should be adjusted such that day scholars pay Ksh.48843 where the parents pay Ksh.19727, while the government pays Ksh. 29116. For boarders the fee should be adjusted to Ksh. 65843 per annum whereby parents pay Ksh.36727 and the government pays Ksh.29116

5.2 Recommendations

The following equations, which yield Ksh.48843 and Ksh. 65843 for dayscholars and boarders respectively, should be adopted in order to check on inflation from time to time.

(Day Scholars): $\boldsymbol{y = 325280 + 22x_1 + 0.917x_2 + 0.208x_3 + 0.047x_4 + 0.049x_5 + 0.043x_6 + 0.019x_7 + 0.1x_8 + 0.157x_9 + 0.166x_{10} + \beta}$

(Boardesrs): $\boldsymbol{y = 496960 + 22x_1 + 0.917x_2 + 0.208x_3 + 0.047x_4 + 0.049x_5 + 0.043x_6 + 0.019x_7 + 0.1x_8 + 0.157x_9 + 0.166x_{10} + \beta}$

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