DETERMINATION OF UNIT COST AMONG SECONDARY SCHOOLS IN KENYA: A CASE OF NANDI NORTH DISTRICT, KENYA

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Abstract

This study determined unit costs of secondary schools in Nandi North District. It employed a descriptive survey design and was guided by a Cost Model derived from the General Education Production Function. Data was collected from all the Head teachers of public and private secondary schools in Nandi North District, Kenya. The research instruments used in collecting data were structured questionnaires. Analysis of data was done using both descriptive statistical techniques including percentages, means and frequency tables. It was found that a total of Ksh. 363,383,481 was spent for the entire district, translating into an average of Ksh. 8,863,012 per school or Ksh.41,768 per student. The school with the highest amount spent and the least amount spent was Ksh.31,332,348 and Ksh.1,586,940 respectively. The findings indicate that the average unit cost per district school was Ksh 34,849, whereas the average unit cost for the provincial schools was Ksh. 50,966. Private schools had an average of Ksh.35, 778 while public schools had an average of Ksh.43, 219. Mixed day schools incurred the least unit cost of Ksh. 33,309 and the highest unit cost was from boys boarding schools at Ksh.51,072. The study recommended that schools should prioritize expenditure areas such as acquisition of teaching and learning resources to ensure cost reduction. It is hoped that the findings from this study will be utilized by the Ministry of Education and other stakeholders in order to come up with strategies for reducing unit costs in schools and look for alternative sources of financing education in secondary schools in Nandi district.

Keywords: Unit cost, economies of scale, school status, school type

Introduction

One of the major developments in the post-colonial period in Africa is the widespread belief by governments and people in various countries that education is a key factor in the process of economic and social change. Education is seen not only as a means of understanding, controlling and developing the natural environment, but also as a tool for the enhancement of life and enrichment of the human spirit (Akinkugbe & Kunene, 2001). There has been increasing demand for more education and training. Kenya's current development agenda as spelt out in Vision 2030 aims at transforming the country into a newly-industrializing middle income able to provide a high quality of life to all its citizens in a clean and secure environment. Under education and training Kenya will provide a globally competitive and quality education training and research.

The World Bank (1990) emphasized on the 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 many developing countries. The national budgetary allocation for Free Secondary Education was between KSh. 25- KSh. 39.7 billion. However, the figures were projected to rise to between KSh.28.3 billion and KSh. 74.3 billion in 2011 (Republic of Kenya, 2008). This heavy commitment has contributed significantly to the government deficit and hence becoming a major constraint on the government efforts to stabilize the economy. 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 of the public revenue to education sector (Kosgei, 2001). The question then arises; how much is actually spent per student (Unit Cost) in a year.

In 2003 the Government of Kenya issued fee guidelines which public schools were expected to follow. However, the amount of fees chargeable per student may vary on condition that D.E.Bs approves them. Schools have not followed the directives and continue to demand to fix fees according to schools' needs which are the point of contention.

KIPPRA (2007) in their submission to the Ministry of Education's taskforce on making public Secondary Education in Kenya affordable noted that available fees structures of some secondary schools was noted that have a multiplicity of payments.. It was further observed that there were inter-school variations in the composition and levels of these payments and the fees are not uniform in all schools. Despite the fees guidelines by the Ministry of Education, schools have continued to ignore government policies on education costs. It is possible for schools to shift hitherto charges on tuition to other budgetary items. This might make the overall cost incurred by parents to remain unchanged, watering down the Government's

effort to make secondary education affordable. It is against this background that the researcher is provoked into determining unit cost among secondary schools in Kenya, The case of Nandi North District. Specifically, the study sought to establish unit cost of secondary schools in the District and to compare unit costs of different secondary schools in the District.

Statement of the Problem

The cost of educating a secondary school child is gaining importance as one of the consideration on issues of affordability and access to education. The effort by the government to harmonize the fees payment in secondary school level in Kenya has been a contentious issue for a long time. Onsomu (2006) notes that given the current secondary cost structure in Kenya, it is defeating to think about increasing participation at secondary school level without reforming these structures.

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Purpose of the Study

The purpose of the study was to determine the cost per student (Unit Cost) among secondary schools in Nandi North district.

Objectives of the Study

This study was set to achieve the following objectives

i. To determine variable costs of secondary schools in the District.
ii. To establish unit cost of secondary schools in the District.
iii. To compare unit costs of different secondary schools in the District.
iv. To determine optimum size of secondary schools in the District.

Conceptual Framework

In education, a school is considered as a firm to process students into desired graduates. This process is not costless since it involves monetary expenditures. 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 is school size (X_2), average teacher salary (X_3), non-teaching staff recurrent expenditure (X_4), expenditure on tuition (X_5), activity (X_6) boarding expenditure (X_7), repair, maintenance & installation (RMI) (X_8), expenditure on Local transport and travelling (LTT) (X_9) expenditure on electricity, water and conservancy (EWC) (X_{10}), medical (X_{11}) and other expenditure (X_{12}).The dependent variable (X_1) will be unit cost and ☐ is the error term.
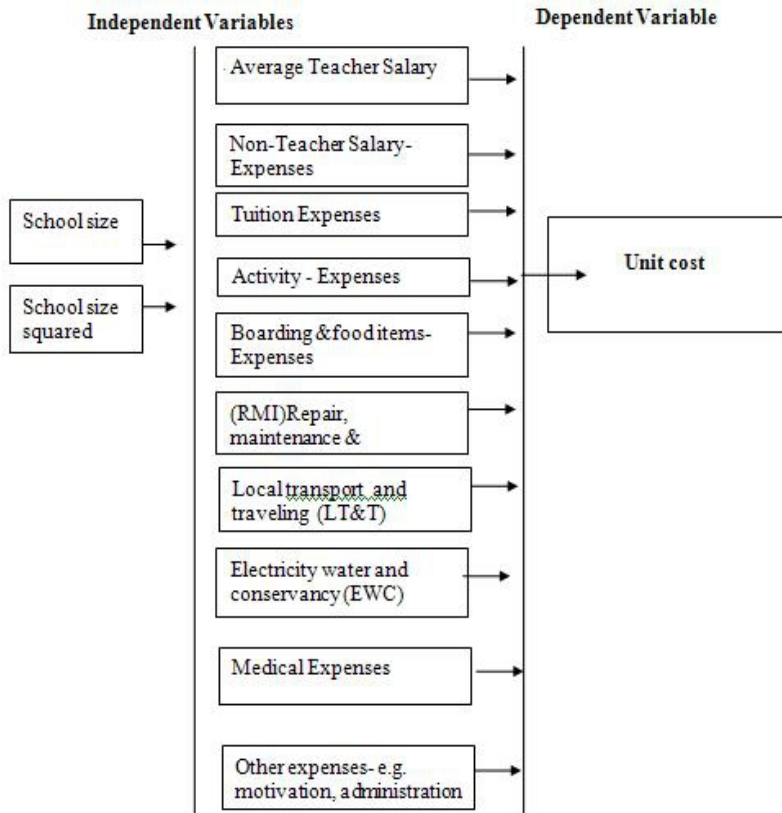

Fig 1.1 Conceptual Framework

Literature Review
a) Investment in Secondary Education
   Lewin and Caillods (as cited in Onsomu, 2006) 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 However, Bray (2002) notes that the levels of education financing, both by public and private sector to a large extent are based on the political, social, and economic factors. Arguments on possible impact of education investment on economic growth and development are mainly based on the social and economic returns on human capital development. It is 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).
   Bray (2002) advances the argument that financing of education requires public spending on the levels of education for which social returns exceed private returns (e.g. basic education) and increased private spending on investments that yields higher private returns (higher and continuing education). The total social benefits of educating children equal the sum of the benefits that accrue individually to the children and their families plus benefits to society that arise from interaction with educated individuals. The benefits to education have been shown as going directly to an individual and the society. This includes such benefits as increased adult wages and income, increased participation in the political process, greater charity donations, and reduced dependency on social support programmes, reduced criminal activity, increased savings, better health, lower mortality rates, and increased life expectancy.

b) Secondary Education Cost Policy Reforms in African Countries
   Secondary school expansion in Zimbabwe can be attributed to high level of policy and financial government commitment and prioritized expenditures sustained for a long period (Lewin and Caillods, 2001). During the expansion period, budgetary allocation to education was maintained at 8 to 9 percent of GNP while secondary 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.

The case of other countries 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).

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.

Several recent government documents refer to the government's high commitment to meeting the EFA and MDGs targets (Republic of Kenya, 2002; MoEST, 2004, 2005), the *Sessional Paper No.1 of 2005* by the then Ministry of Education Science and Technology (MoEST) underscores that costs of secondary education are the main reason for the low transition rate to secondary education. The report (MoEST, 2004) 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: 177). This policy framework became the backbone for implementing free secondary education.

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.

c) *Education Expenditure*

Education expenditure refers to the financial disbursements to educational institutions for the purchase of various resources or inputs of the schooling process such as administrators, teachers, materials, equipment, and facilities (OECD, 2000). A study carried by Akinkugbe& Kunene (2001) found an imbalance in financing of education in Swaziland. The study showed that on average, about 30% of the recurrent expenditure goes to primary education, while the remaining 70% is equally divided between secondary and tertiary levels of education as well as with the other activity heads in the Ministry of Education. The study revealed that what is needed to educate one single university student would be sufficient to educate about 55 primary or about 20 secondary school students. Additionally, while the contribution of the household to the education system is quite high at the primary, secondary and high school levels (over 40%), at the tertiary (post-secondary) level, the household contribution is almost nil. The study found that there existed a serious resource constraint particularly for the materials and supplies needed to provide high quality education in primary schools in Swaziland.

The Government of Kenya recognizes the importance of secondary education. This has made the Government to increase the budgetary allocation to this level of education in order to increase access and ensure high quality secondary school education for all Kenyans (Meier, 1990). In light of the above, and in recognition of the important role played by quality education towards economic growth and expansion of employment

opportunities, the government of Kenya increased allocation to the education sector by 11% from Ksh.108.3 billion in 2006/2007 to Ksh. 119.5 billion in 2007/2008 and in 2008/2009 increased it further to a total of Ksh138.241 which is an increase of Ksh.10.3 billion from the previous year. The increase is due to the introduction of tuition free secondary education and hiring of more teachers. In the financing of secondary education in Kenya, the Ministry of Education operates a bursary scheme at secondary education level in order to enable students from poor families to get access to secondary education (Njeru and Orodho, 2003).

Achola (in Kosgei, 2001) studied the financing of secondary schools in Kenya and found out that the public expenditures on education were too high and unrealistic and recommends for urgent need for community and local governments to finance the supply of education with a very limited support from the central government. The study fails to recognize the fact that education is a human right and it is the responsibility of the government to ensure that her citizens get access to basic education. The study also fails to suggest ways of putting the existing finances into better use by the institutions. The study also fails to state the unit cost of secondary education in Kenya. The current study is centered on determining the unit costs of the schools and compares the unit costs among different categories of secondary schools in Nandi North District.

d) *Recurrent Expenditure per Student*

Imerman and Otto (2003), in their investigation of school district expenditures with respect to school district size in Iowa, report that expenditures per student generally rise as district sizes fall below about 750 students and expenditures per student are relatively constant at enrollment levels above 1000 students. The indicator of expenditures per student exhibits a common pattern over time; expenditures per student have been increasing between 1986/87 to 1993/94. Expenditure per student increased from Ksh.770 in 1986/87 to Ksh. 2078 in 1993/94 financial year. These figures exclude the parent's contribution to their children's education. Data from the WMS III report showed that households spend about Ksh. 712.00(US$11.36) and Ksh 1150.00 (US$18.35) at public primary and private primary, and about Ksh. 9643.30 (US$153.85) and Ksh. 10208 (US$162.86) per year at the public and private secondary schools respectively. Thus, the parental contribution to education of a pupil in a public primary school constitutes about 26 percent of the total per pupil expenditure at the primary level (Government of Kenya, 1998).

e) Education Costs

Bedi *et al.* (2004) points out that attending school has both direct and indirect costs. Such cost lower the resources available for household consumption. Consequently, a household has to make a choice between benefits that accrue to education, including externalities and household consumption foregone. Bedi (2004) conceptualizes such choice in terms of a utility function that has to be maximized. Using panel data constructed from the 1992, 1994, and 1997 Kenya Welfare Monitoring Survey (WMS I, II, and III) data sets, direct costs, opportunity costs, and expected benefit were found to influence the decision to enroll a child in primary school in Kenya. Njeru and Orodho (2003) argue that there has been a considerable decline in secondary school gross enrollment ratio (GER), with wide and severe regional and gender disparities in access to secondary education in Kenya.

A study done by Ngware (2006) established that School fees were the proxy for secondary school education costs. The results show that school fees have a negative influence on access to secondary education at 10 per cent level of significance. This contradicts the findings by Gertler and Glewwe (1989) which found that parents were willing to pay higher fees in order to expand secondary schooling and, therefore, increase participation in rural Peru. Further, descriptive results on reasons for not attending school show that lack of school fees was the main reason contributing to low participation in secondary school education, accounting for 33 per cent of the responses. Other reasons include finding school uninteresting, pregnancy, early marriage, work at home/field, paid employment, too old, and cultural factors. The high cost of teaching and learning materials, fees, extra levies, capital development costs, and other charges paid by parents constitute the overall cost burden of secondary education.

Research Methodology

The study was conducted in Nandi North District of Rift-valley Province. This study employed descriptive survey design. The target population for this study comprised of Head teachers of all public and private schools in the Nandi North district. The study took census and thus collected data from all the Head teachers of all the public and private secondary schools in the District. The District has 39 public secondary schools and 2 private schools making a total of 41 schools. Out of this 5 are boys schools, 9 are girls' schools and 27are mixed secondary schools. The main instrument of data collection was questionnaire. The questionnaire was used to collect data from the Head teachers on the recurrent expenditure in the year of study, 2009. Data was analyzed using descriptive statistical techniques and inferential statistics. Descriptive statistics included frequencies, percentages, tables and means. Multiple regression analysis was used in testing the

hypothesis. The independent variables used in this study were: school size (X_2), average teacher salary (X_3), non-teaching staff recurrent expenditure (X_4), expenditure on tuition (X_5), activity (X_6), boarding expenditure (X_7), repair, maintenance & installation (RMI) (X_8), expenditure on Local transport and travelling (LTT) (X_9), expenditure on electricity, water and conservancy (EWC) (X_{10}) and medical (X_7). The dependent variable (X_1) was unit cost and $\square$ is the error term.

Results

a) *Unit Cost of Secondary Schools in Nandi North District*

The study sought to establish the unit cost of secondary schools in the district. The unit costs were compared among schools based on school status, school category and school type. Therefore schools are grouped into provincial or district schools, private or public schools and whether they are girl's, boys, mixed day &boarding or mixed day Schools. The unit cost was arrived at by dividing the total cost of each school by the number of students in that school. This study agrees with a study by KIPPRA (2006) which found out that Unit cost analysis is important in establishing what actually constitutes any form of investment. Education as an investment good comprises of certain costs that go into teaching and learning.

The findings indicated that a total of Ksh. 363,383,481 was the spending of the forty one (41) schools in the district during the year of study. Out of this, public schools spend a total of Ksh.356,520,861 as follows, district schools Ksh.173,025,298 and provincial schools Ksh.190,358,183. While private schools spend a total of Ksh.6,862,620. The district enrolment stood at 8,700 while district unit cost was Ksh. 41,768.

b) *Unit Cost per School Status*

Table 1shows the unit cost per school status.

Table 1: Unit cost per school status

School status	N	Enrolment	Variable Cost	Unit cost	Min	Max
Private schools	2	197	6,862,620	34,836	27,709	43,846
Public schools	39	8,503	356,520,861	41,929	22,942	88,129
Total	41	8,700	363,383,481			

There were two (2) private schools in the district with an enrolment of 197 students, majority (39) were public schools with an enrolment of 8,503. unit cost stood at Ksh.34,836 for private schools with the lowest unit cost of Ksh. 27,709 and a maximum of Ksh. 43,846. For public schools unit cost was Ksh. 41,929 with a high of Ksh. 88,129 and low of Ksh. 22,942.

c) **Unit cost Per School Category**

Table 2: Unit cost per school category

School Category	N	Enrolment	Variable Cost	Unit cost	Min	Max
District schools	28	4,965	173,025,298	34,849	22,942	75,569
Provincial schools	13	3,735	190,358,183	50,966	41,737	88,129
Total	41	8,700	363,383,481			

As shown in Table 2, there were 28 district schools and 13 provincial schools in the district with an enrolment of 4,965 and 3,735 respectively. It was established that the average unit cost per district school was Kshs 34,849 whereby the minimum Unit cost per school was Ksh 22,942 and maximum was Kshs 75,569. This shows a big range between the minimum unit cost and the maximum unit cost. Further Table 4.12 shows that the average unit cost for the provincial schools was KSh. 50,966 with minimum unit cost incurred was Ksh. 41,737 and maximum was KSh. 88,129 This shows that provincial schools incurred higher unit costs as compared to district schools. However the difference is small thus this study concurs with Cox (2002) reports that when examining Utah's administrative cost per student, it showed little difference between large and small districts unless the enrolment dropped below 1000 students the administrative costs rise.

d) **Unit cost per school type**

The study sought to find out the unit cost across different secondary schools according to school type. The results are as shown in Table 3.

Table 3: Unit Cost per School Type

School Type	N	Enrolment	Variable Cost	Unit cost	Min	Max
Boys boarding	5	1,740	88,865,548	51,072	41,737	88,129
Girls boarding	9	2,355	116,422,703	49,436	41,472	68,144
Mixed boarding	1	713	24,563,756	34,451	34,451	34,451
Mixed day	20	2,638	87,869,034	33,309	22,942	75,569
Mixed day and boarding	6	1,254	45,662,440	36,413	24,508	51,653
Total	41	8,700	363,383,481			

It is instructive to note that there were 5 boys boarding, 9 girls boarding, 1 mixed boarding, 20 mixed day and 6 mixed day and boarding schools. The average unit cost incurred per boy's boarding school was Ksh. 51,072. The minimum unit cost in this category was Ksh. 41,737 and the maximum was Shs 88,129, this category enrolled 1,740 students. For the girls' boarding schools with an enrolment of 2,355, the average unit cost was Ksh.49,436 with Ksh 41,472 being the minimum unit cost incurred and Kshs 68,144 being the maximum unit cost incurred. The average unit cost for the

only mixed boarding school was Kshs 34,451 the school had an enrolment of 713 students.

The average unit cost incurred by mixed day secondary schools in the district was Ksh. 33,308.96 with an enrolment of 2,638. The minimum unit cost was Ksh. 22,942 and the maximum was Ksh 75,569 for mixed day secondary schools. It is worth noting that; majority (20) of the secondary schools involved in this study was mixed day schools. There were 6 mixed day and boarding schools with an enrolment of 1,254, the unit cost was Ksh. 36,413 with minimum unit cost of Ksh. 24,508 and maximum unit cost of Ksh. 51,653. This implies that there was a wide gap in unit cost incurred taking into consideration the minimum and the maximum unit cost. Therefore, boys' boarding schools incurred the highest unit cost followed by girls' boarding schools and mixed day and boarding schools. Mixed day schools incurred the least unit cost of Ksh. 33,309.

Conclusion

Based on the findings of the study, it can be concluded that the average Unit cost for the schools in the district was Ksh. 41,768. The findings further indicated that the average Unit cost per district school was Ksh. 34,849 whereas the average Unit cost for the provincial schools was Ksh. 50,966. This shows that provincial schools incurred higher Unit costs as compared to district schools. On the other hand unit cost for private schools stood at ksh.34,836 compared to Ksh.41,929 for public schools. Based on the findings of the study, it can also be concluded that boys' boarding schools incurred the highest Unit cost at Ksh.51,072 followed by girls' boarding schools at Ksh.49,436 and mixed day and boarding schools at Ksh.36,419. Mixed day schools incurred the least Unit cost of Ksh. 33,308.96.

Recommendations

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

a) Focus on priority areas such as acquisition of teaching and learning resources to ensure cost reduction. Head teachers should encourage parents to pay fees in kind. For instance, parents should be encouraged to supply building materials, foodstuffs and labour to the schools. This may reduce costs on boarding significantly.

b) More day schools should be encouraged as opposed to boarding schools that lead to the increase in Unit cost. Alternatively boarding cost should be reduced by making proper use of the resources available in the secondary schools in the district.

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