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Effect of tuition waiver on internal efficiency in public secondary schools in Bungoma County, Kenya

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Abstract
Introduction of the tuition waiver in 2008 by the government of Kenya improved the student enrolment in public secondary schools. Despite this improvement; students' progression was not researched on and documented. The purpose of this study was to analyze the effect of the waiver on internal efficiency in public secondary schools in Bungoma County. The study applied the goal theory of evaluation and was guided by a descriptive survey research design. Simple random sampling and purposive sampling techniques were used to select the sample. The findings were: graduation rates increased from a mean of 70.53% before the waiver, to a mean of 75.87% after the waiver. This change was statistically significant ($p<0.05$). Secondly, the average number of years per graduate reduced significantly from a mean of 8.10 years before the waiver, to a mean of 6.53years after the waiver. In conclusion, the tuition waiver had a positive effect on internal efficiency.

Keywords: effect, internal efficiency, public secondary school, tuition waiver

1. Introduction

Secondary education is a critical level in any education system. As a transitional stage to higher education, it is important for economic growth, and helps in socialization and empowerment of the youth, who are at risk of unemployment (UNESCO, 2005) [21]. In addition, it enhances the acquisition of skills and competencies needed in the job market. Studies on poverty analysis and education returns show that although primary education has the highest social returns; the incidence of poverty falls and level of private returns increases with the increase in education level (UNESCO, 2005 [21];Oiro *et al.* 2004 [17]; Lewin and Caillods 2001 [11]; Manda, Kimenyi and Mwabu, 2001 [13]; Mwabu *et al*, 2000) [16].Available evidence shows that, tuition fees and other expenses incurred by the individual students and their families are barriers to accessing and completing secondary school education (Boyle *et al.* 2002) [5].

A number of governments abolished school fees as a strategy to improve enrolments and participation rates in education (UNESCO, 2007) [22]. People who support the removal of school fees contend that, the gesture reduces the cost of education and makes school more accessible to the poor in society. This argument is supported by studies conducted in a number of African countries. The findings from these studies show that, a year after school fees was removed, student/pupil enrollment improved immensely (Tomaseuski, 2003 [20]; Rose, 2002 [19]; Al-Samurai and Hassan, 2000) [4]. Although an increase in student enrollment is good, it was equally important to investigate the progression of those students who enroll at an education level. Ghana is one of the African countries that have implemented policies aimed at enhancing access to basic education (Akyeampong *et al.* 2007) [2].The most recent initiative in this direction was the introduction of the Capitation Grant Scheme (CGS) in 2005.The purpose of the capitation grant was to eliminate the household need to pay fees for basic education, especially for the poor who were unable to access education because of costs. Available data revealed that introduction of the Capitation Grant (CG) increased basic school enrolments by an estimated 17% in the first year of implementation (MOESS, 2007). However, a more recent report on education in Ghana by the World Bank (2011), observes that the enrolment increases in the first year as a result of CGs were almost fully counterbalanced by the increasing number of dropouts. Consequently, the net effect of capitation grant on enrolment was just about 2.2 percent. A study by Osei *et al.* (2009) [18] examined the effects of capitation on education outcomes in Ghana. An econometric estimation model was used to assess the impact of CGs on; enrolments, the Basic Education Certificate Examinations (BECE) pass rates, and the gender parity. According to the findings of this study, CGs had no significant effect on the BECE pass rates. The study also found no significant relationship between CG and enrolment rates, although enrolments improved over the period of the study (2005-2007). Further analysis also revealed that the capitation grants had no significant effect on bridging the gap between BECE pass rates for males and females. The above information shows that although the Capitation Grant initially improves enrolment, the greatest challenge is to eliminate the high dropouts associated with the improved enrolments.

One of the most notable studies conducted in Kenya on internal efficiency, was the one carried out by Abagi and Odipo in primary schools in 1997.The findings of this study revealed that primary education has had internal efficiency problems, such as the high wastage because of low completion and high repetition rates. According to this study, drop-out and repetition rates are higher in upper classes, Standards 5 to 8. Abagi and Odipo (1997) [1] observe that, about 10percent of

pupils from each class fail to move on to the next every year, resulting in the high cumulative loss experienced by Standard 8. For example, of the number of those who were enrolled in Standard 1 in 1989, only 44.3percent (43.3 percent girls and 45.1percent boys) completed in 1996. This indicated that large numbers of primary school pupils left the system before completing the final year of primary education. Although this study investigated issues of internal efficiency in education, it did not consider the probable factors responsible for the low completion rates. The Kenya National Bureau of Statistics (KNBS) of 1997 showed that low school attendance by both boys and girls in Kenya, was attributed to the school fees burden. Another survey revealed that the household unit cost for primary education was about KES 3000 per annum, while the unit cost for secondary education was about eight times as much (KNBS, 2005). In this survey, the non-tuition expenditures averaged close to KES 10,000, thus accounting for over 40 percent of the average total cost of secondary school education. The foregoing studies reveal that the amount of fees levied by schools has a strong bearing on enrollment and progression of students in an education level. According to the Ministry of Education Task force Report on Affordable Secondary Education of 2008, of the 3.12 million secondary school age population in 2006, only about 1.03million students were in the 4,257 secondary schools (MOE, 2008). This translated to a Gross and Net enrollment ratios of about 32% and 23% respectively. It is against the foregoing background that the Ministry of Education (MOE) set up a task force on affordable secondary school education in 2007 to advice on how to make secondary education more affordable and accessible in Kenya (Malenya, 2008) [12]. It is on the basis of the recommendations of this task force that the tuition waiver was established in 2008. The tuition waiver is made up of an education subsidy established by the government of Kenya to support the education of all students in public secondary schools, and is financed by the national government. The subsidy is processed and allocated to the public secondary by the Ministry of Education. Each student is allocated a total of KES.10, 265 per calendar year, for the purpose of tuition (MOE, 2008). After subsidizing secondary education in 2008, the total student enrolment in secondary schools increased from 1,180,267(638,690 Boys and 541,513 Girls) in 2007 to, 1,335,907(746,513 Boys and 635,698 Girls) in 2008 and 1,507,546(808,650 Boys and 698,896 Girls) in 2009(KNBS, 2009).

Although an increase in student enrollment was realized after the subsidy was introduced, more than half of the school age population was not accessing secondary education due to the high cost attributable to boarding expenses (KNBS, 2009). This scenario immensely cast doubts on the capacity of the subsidy to enhance internal efficiency in secondary schools. According to the County Education Office, student enrollment in public secondary schools in Bungoma County continued to witness a steady increase after the introduction of the tuition waiver in public secondary schools in Kenya in 2008. However, not much was reported about the issues of internal efficiency in these schools. In this regard, it was important to investigate the changes that might have occurred in internal efficiency at the secondary education level.

1.1 Statement of the Problem

Bungoma County, like the rest of the other counties in Kenya, experienced a remarkable growth in the student enrollment in public secondary schools after the public subsidy was introduced in 2008. However, despite this increase in student enrollment, the effect of the subsidy on internal efficiency in public secondary schools in the County had not been researched about and documented. Consequently, the question that remained unanswered was; what change did the public subsidy have on the internal efficiency of public secondary schools in Bungoma County? It was important to answer this question because; annually the government of Kenya allocates considerable amounts of money in its national budget towards the subsidization public secondary school education.

1.2 Hypotheses

$H0_1$: The tuition waiver has no significant effect on the student graduation rates in the public secondary schools in Bungoma County.

$H0_2$: The tuition waiver has no significant effect on the average number of years per graduate in the public secondary schools in Bungoma County.

1.3 Justification

Investment in Education in Kenya, like in any other developing country happens against a backdrop of scarce resources. Consequently, it is prudent that the resources allocated to education by the exchequer achieve the intended objectives. In view of this; this study carried out with the anticipation that its findings would become a source of reference for scholars and researchers who have interest in the area of internal efficiency in public education.

1.4 Limitations

The study did not control for the other factors that might affect internal efficiency in public secondary schools such as: student ability, student motivation, parental influence and the quality of schools. These factors were considered to have remained unchanged for the period before and after introduction of the tuition waiver. The rationale behind this was that; the tuition waiver was the only major intervention that had so far occurred at this level of education in the recent past. Consequently, any changes in internal efficiency at this level would immensely be attributed to the waiver.

1.5 Scope and Delimitations

For the purpose of manageability, the study was delimited in the following ways:

1. The study used data from the public secondary schools only. This is because; it is the public secondary schools that receive the education subsidy from the government.
2. The study excluded secondary schools that were not in existence before the introduction of the tuition waiver. This was because; such schools did not have the baseline information on student enrollment and progression before the introduction of the government subsidy.
3. The data that was collected on student enrollments and progression was restricted to the period 2002 to 2007 and 2009 to 2014; these durations represented the years before

and after introduction of the tuition waiver. These periods were sufficient for making meaningful analyses on equity and internal efficiency in the public secondary schools.

2. Materials and Methods

2.1 Research Design

This study used the descriptive survey research design. In a survey design, inferences are made about a large group of people, by collecting data from a relatively small number of individuals from the group. Allan (2001) [3] observes that, a survey is a well-organized and reliable observation of what is going on in the world, and can be used to show the current status, compare the different situations and identify the relationships between the variables.

2.2 Locale

Bungoma County is one of the four Counties in the former Western Province of Kenya, and it occupies a total surface area of 3,032.4 Km^2. The County had a total population of 1,378,224 persons (Male 673,133, Female 705,091) according to the Population and Housing Census Report of 2009 (KNBS, 2009).The population projection for 2015 at a growth rate of 3.1% gives the County a population of 1,655,281(Male 808,449, Female 846,832).According to the County Government of Bungoma (CGOB, 2013), approximately 78.3% percent of the foregoing population lives in the rural area. In addition, the County has 275 public secondary schools with an eligible school age population of 150,738 children for this level. Bungoma County was selected as the locale for this study because of the following reasons: only 11.0% of its population has secondary education, it has a high agricultural potential yet approximately, 52.17 percent of the County's population lives in absolute poverty (CGOB, 2013). Consequently, attempts to improve internal efficiency at the secondary school level can play a significant role in ensuring social mobility and in promoting development in the County.

2.3 Study Population

The study population comprised of all the 115 public secondary schools in the County that were in existence and had attempted KCSE by 2002, the 115 principals of these school and the County Director of Education. See table 1.

2.4 Sample Size

The sample sizes for the different categories of the population as shown in table 3.1 were determined on the basis of the sample determination formula as provided by Krejcie & Morgan (1970). The foregoing guidelines are based on the following formula:

$$s = \chi^2 NP(1-P) \div d^2(N-1) + \chi^2 P(1-P) \quad (1)$$

Where:
S = Sample size
χ^2 = The table value of chi-square for 1 degree of freedom for the desired confidence level
N = The population size
P = Population proportion (assumed to be 0.50)
d = The degree of accuracy expressed as a proportion (.05).

Table 1: Study population and sample

Category	Population	Sample
Public Secondary Schools	115	90
Principals	115	90
County Director of Education	1	1

Source: County Education Office (2015)

2.5 Sampling procedure

This study used the simple random sampling and purposive sampling techniques to select the sampling units. First and foremost, the sampling frame for the 115 public secondary schools in the County was developed to facilitate the use of the simple random sampling technique to select a sample of 90 public secondary schools. While, purposive sampling technique was used to select the school principals and the County Director of education.

2.6 Research Instruments

The study used two sets of document analysis checklists to collect data. The guides for analyzing documents were used to analyze the records on student; enrollment, progression and completion.

2.7 Data Analysis and Presentation

The raw data was appropriately coded, tabulated and subjected to analysis. In this study, both descriptive and inferential statistics were used to analyze the collected data. Data on student enrollment, progression and graduation was obtained using the following checklists: student enrollment and progression guide and the form four student enrolment and graduation guide. This data was used to calculate the graduation rates and the average number of years per graduate for the selected schools. A paired sample t-test was conducted to test for any significant difference between the stated indicators for the period before and after the public subsidy was introduced in public secondary schools. The level of significance differences between the indicators for the stated periods showed the degree of change in internal efficiency that could be attributed to the tuition waiver.

3. Results and Discussions

This section presents the findings and discussions of the objective and hypotheses of the study.

3.1 Effect of the waiver on the student graduation rates in public secondary schools in Bungoma County

In this study, a secondary school graduate was any student who sat for the KCSE examination and scored a mean grade of D plus (D+) and above. The graduation rate was determined by dividing the number of students who sat for the KCSE exam and scored a mean grade of D+ and above in a given year, by the total student enrolment in form four in that particular year The following formula was applied to calculate graduation rates over the years for each of the sampled schools in the County.

Graduation Rate =

$$\frac{\text{Number of students with D+ and above in the year}}{\text{Student enrollment in Form Four in the year}} \times 100 \quad (2)$$

In this study, the KCSE results for the six consecutive years before the introduction of the tuition waiver in 2008 were considered. In addition, the KCSE results for the first six consecutive years after the introduction of the tuition waiver were also considered for computation of the graduation rates. By comparing the two sets of graduation rates, it was possible to determine the effect of the tuition waiver on the graduation rates in the County. After determining the annual graduation rates for each individual school for the stated period, the overall mean graduation rates were also calculated and presented, as shown in table 2.

Table 2: The mean annual graduation rates in Public secondary schools in Bungoma County

Year	Number of Schools	Mean Graduation Rate (%)
2002	90	65.64
2004	90	73.15
2005	90	74.62
2006	90	71.12
2007	90	69.04
OMGRBF	90	**70.53**
2009	90	73.96
2010	90	75.40
2011	90	76.30
2012	90	75.55
2013	90	75.14
2014	90	78.88
OMGRAF	90	**75.87**

Source: Field data

According to table 2, the mean annual graduation rates for public secondary schools were generally lower before the tuition waiver was introduced, as compared to the period after the waiver was implemented. The overall mean graduation rate before (OMGRBF) the waiver was 70.53%, while the overall mean graduation rate after (OMGRAF) the waiver was 75.87%. This implies that after the tuition waiver was introduced, the proportion of students who completed the fourth form and scored a result of a D+ (plus) and above in KCSE increased by about 5.34%. The lowest annual mean graduation rate was 65.64% and this was recorded in the year 2002, while the highest annual mean graduation rate was 78.88% and was attained in the year 2014. In order to establish whether there was any statistically significant difference in the graduation rates for the period before and after the waiver, a paired sample t test was applied to test the null hypothesis.

3.1.1 Testing the Null Hypothesis

H_{01}: The tuition waiver has no effect on the graduation rates of the public secondary schools in Bungoma County.

The overall mean graduation rates for the period before and after introduction of the waiver were calculated for each of the 90 individual public secondary schools to facilitate the testing of the null hypothesis. The overall means for the individual schools were then subjected to the paired sample t-test analysis using the statistical package for social sciences (SPSS).The results of the analysis are as shown in table 3.

Table 3: The paired sample t-test analysis of the graduation rates

Pair 1	Mean	SD	C.I	t value	df	Sig (2-tailed)
OMGRBF	-5.34	10.82	95%	4.64	89	0.000

Source: SPSS data analysis

Table 3, shows that there was a difference of -5.34 percent between the overall mean graduation rates before (OMGRBF) and the mean overall graduation rate after (OMGRAF) the tuition waiver was introduced. The negative sign implies that the graduation rate was higher after the waiver was introduced. The t-statistic is 4.638 and the level of significance is $p = 0.000$. Since the p-value was less than 0.05 ($p < 0.05$), the null hypothesis was rejected. This meant that, introduction of the tuition waiver significantly changed the levels of graduation rates in the public secondary schools in the county. These findings were slightly different from those of a study carried out by Osei *et al.* (2009) [18] on the effect of capitation on education outcomes in Ghana. In their study, when an econometric estimation model was used to assess the impact of capitation grants on Basic Education Certificate Examination (BECE) pass rate, it emerged that the capitation had no significant effect on the BECE pass rate. However, the differences in the findings of these two studies could be attributed more to the methodology used in conducting and analyzing the results, other than the effect of government subsidy. For example, while Osei *et al.* focused primarily on the pass rate, the current study used the graduation rates as a measure of internal efficiency.

3.2 Effect of the tuition waiver on the average number of years per graduate in public secondary schools in Bungoma County

In this study, the average number of years per graduate (AYPG), referred to the average period of time a student took in school, from the time of admission to form one, to complete form four with a score of at least a D+ pass in KCSE. The following formula was applied to calculate the average number of years per graduate.

$$AYPG = \frac{\textit{Total student enrolment from entry grade to exit grade in a cohort}}{\textit{Total number of students who scored a D + and above in the cohort}} \quad (3)$$

There were a total of six cohorts over the period; 2002 to 2007 and 2009 to 2014. That is, there were three cohorts before and another three cohorts after the introduction of the tuition waiver. To begin with, the AYPG were calculated per cohort for each of the 90 public secondary schools in the County. Thereafter, the mean average number of years per graduate (MAYPG) was calculated for all the schools per cohort, as presented in table 4.

Table 4: The mean average number of years (MAYPG) per cohort in public secondary schools

Cohort	Number of schools	MAYPG
Before tuition waiver		
2002	90	6.78
2003	90	9.08
2004	90	8.45
Overall Mean (All Combined)		8.10
After tuition waiver		
2009	90	6.51
2010	90	6.79
2011	90	6.27
Overall Mean(All combined)		6.53

Source: Field data

According to table 4, the average numbers of years per graduate (AYPG) were generally higher for the period before than after the introduction of the tuition waiver. During this period, the overall mean for the three cohorts was 8.1 years, compared to an overall of 6.53years for the period after the tuition waiver. The highest number of years per graduate was recorded for the 2003 cohort (2003 to 2006), while the lowest number of years was for the 2011 cohort (2009 to 2012). The paired sample t- test was applied to test for any significant difference in the average number of years per graduate, for the period before and after introduction of the tuition waiver.

3.2.1 Testing the Null Hypothesis

H_{02}: The tuition waiver has no effect on the average number of years per graduate in the public secondary schools in Bungoma County

The overall mean graduation rates for the period before and after introduction of the waiver were calculated for each of the 90 individual public secondary schools to facilitate the testing of the null hypothesis. These overall means for the individual schools were subjected to the paired sample t-test analysis using the statistical package for social sciences (SPSS).The results are as shown in table 5

Table 5: The paired sample t-test analysis of the average number of years per graduate

Pair 1	Mean	SD	C.I	t value	df	Sig (2-tailed)
MAYPGBF	1.57	4.152	95%	3.595	89	0.001

Source: SPSS data analysis

Table 5, shows that there was a difference of 1.57 years between the mean average number of years per graduate before (MAYPGBF) and the mean overage number of years per graduate rate after (MAYPGAF) the tuition waiver was introduced. The positive sign implied that before the waiver was introduced, a student would on average take 1.57 years more to graduate from the secondary level of education, as compared to the period after the waiver was introduced. The t-statistic was 3.595 and the level of significance was, $p = 0.001$. Since the p-value was less than 0.05 ($p < 0.05$), the null hypothesis was rejected. This meant that, introduction of the tuition waiver did significantly reduce the number of years a student takes to graduate from the public secondary schools in the county. The reduced period of graduating from the public secondary school, was attributed to the improved graduation rates because of the introduction of the waiver.

4. Conclusion

The conclusion that was drawn from the findings of this study was that, introduction of the tuition waiver helped to increase the proportion of students who achieved quality grades at KCSE, thus leading to an improvement in the graduation rates of the public secondary schools in the County. In addition, the high number of graduates led to a reduction in the average number of years a student would take to successfully go through the public secondary education.

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