The Degree to Which Parents' Association Costs Predict Secondary School Students' Gross Attendance Ratio in Laikipia County, Kenya.

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ABSTRACT

This study seeks to examine the extent to which private costs influence the participation of students in public day secondary schools in Laikipia County. The study was necessitated by the declining students' participation in public day secondary schools as measured by gross attendance ratio and gross enrolment ratio specifically in Laikipia County. The objective of the study was to examine the extent to which private costs influence the participation of students in public day secondary schools in Laikipia County. This study was guided by two theories: Production Function Theory of Education & the Equity Theory of Motivation. The research gathered both qualitative and quantitative data simultaneously using convergent parallel mixed methods design. The target population was 19,065 respondents, of whom were, five sub County directors of education; 78 principals; 7,800 form three and four parents; 8,870 form three and four students, and 312 form three and four class teachers. Census was used to select five SCDEs, stratified random sampling was used to select 25 principals and 400 students, simple random sampling to select 400 parents and 100 class teachers to make a sample size of 930 participants. Both probability and non-probability sampling methods were used to select a sample size of 930 participants. Data was gathered from both primary and secondary sources. Questionnaires were utilized to gather primary data from class teachers, students and parents while structured interview schedules were utilized to gather qualitative data from the sub County directors of education and principals. Pearson Product Moment Correlation Coefficient (r) was computed and a level of 0.87 was achieved. The research utilized tangerine electronic data collection software used for data entry and data cleaning. Statistical Package for Social Sciences (SPSS) was used to analyze quantitative data. Iterative Thematic Inquiry (ITI) was utilized to analyze qualitative data.

Keywords: Indirect Costs in Education, Gross Enrolment Ratio, Gross attendance Ratio.

INTRODUCTION

According to the Organization for Economic Co-operation and Development (OECD) report, secondary education promotes social and emotional development, helping students establish relationships with their personal well-being and protect against challenging life events (OECD, 2017). The World Bank has said that investing in secondary education is critical to eradicating poverty and improving health because these investments equip people with the knowledge and skills necessary to obtain better job opportunities (World Bank, 2019). According to a research article published in the Journal of Education, secondary education plays an important role in promoting civic education and civic engagement among young people (Davies et al., 2018).

International Labour Organization (ILO) in 2019 concluded that most children between the ages of five and

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seventeen drop out of school due to child labour. Sustainable Development Goal 8 aims to eliminate all forms of child labour by 2025. With the deadline still a decade away, the target has been far from being met since 2016; approximately one in ten children between the ages of 5 and 17 worldwide (152 million in total) are involved in child labour, and most of them work as unpaid domestic workers. Almost half of child workers work in dangerous jobs and face serious health and safety problems. Approximately one-third of working children do not go to school at all. Others go to school, but not always. Children who engage in child labour often leave school early without finishing school and receive low grades in school examinations (Thévenon and Edmonds, 2019).

Families experiencing financial difficulties often have difficulty paying secondary school fees, which causes school enrolment rates to decrease (Smith, 2023). Cultural norms and expectations may discourage certain groups from prioritizing secondary education thus perpetuating disparities in enrollment ratios (Patel and Jones, 2022).

Remote rural areas often lack accessible secondary schools, posing significant barriers to enrollment and attendance for students in these regions (Garcia and Nguyen, 2024).

According to Johnson (2023) gender differences can negatively affect participation in secondary education. The author believes that gender relations and expectations lead to inequalities in access to secondary education, particularly affecting girls in certain cultures. He also believes that there are policy and institutional barriers to participation in secondary education. He noted that difficult access policies and institutional practices can create problems in accessing secondary education, especially for disadvantaged groups.

Gross Enrolment and Gross Attendance Ratios as defined by UNESCO (2024) are fundamental indicators of educational participation globally. Gross Enrolment Ratio (GER) as an indicator of participation in education and in the current study, refers to the total enrolment in a specific level of education, regardless of age, expressed as a percentage of the eligible official school-age population corresponding to the same level of education in a given school year. The World Bank (2018) observed that the gross enrolment ratio (GER) in Sub-Saharan Africa was 48.67%. with the exclusion of high-income countries in this region. UNESCO global monitoring report (GER) (2020) has given data that in the year 2019, only 53% of upper secondary students completed schooling. This is an indication that the school attendance ratio and gross enrolment ratio were inadequately low. The global gross enrolment ratio (GER) for upper secondary education was 68.2% in 2022 (UNESCO Institute of Statistics (UIS), 2022). For instance, in 2018, the gross enrolment ratio (GER) for upper secondary school in Mauritius was 88%, whereas it was only 7% in Chad and Seychelles (79%). Reasonable ratios are also found in countries such as Cape Verde (66%) and Rwanda (56%). Education GER&GAR ratios were lower in countries such as South Sudan (6%), Eritrea (7%) and Niger (8%) (UNESCO Institute of Satistics, 2020). A GER value near or above 100% means that a country is able to accommodate its entire school-age population, but does not represent the percentage of students currently educated in school. Therefore, achieving 100% GER is necessary but not sufficient to enroll all eligible children. When the GER exceeds 90% for a particular level of education, the aggregate number of places for pupils is approaching the number required for universal access of the official age group. However, this is a meaningful interpretation only if one can expect the under-aged and over-aged enrolments to decline in the future to free places for pupils from the expected age group (UNESCO Institute of Statistics, 2024).

GER can exceed 100% due to the inclusion of over-aged and under-aged pupils/students because of early or late entrants, and grade repetition. In this case, a rigorous interpretation of GER needs additional information to assess the extent of repetition, late entrants. The main purpose of calculating GER is to show the general level of participation in a given level of education. It indicates the capacity of the education

system to enroll students of a particular age group.

Gross Attendance Ratio (GAR) on the other hand, shows the number of students attending a given level of education at any given time during the reference academic year, regardless of age, expressed as a percentage of the official school-age population corresponding to the same level of education (UNESCO Institute of Statistics, 2024)

A high GAR generally indicates high participation, regardless of the student's age group. Regarding primary and secondary education, a GAR value near or above 100% indicates that the country is able to provide for its entire school-age population, but does not indicate the percentage of students enrolled. Therefore, a GAR of 100% is necessary but not sufficient to enroll all eligible children. When the GAR of the program is given above 90%, the total number of quotas of students reaches the number required for international attendance for the legal age group. However, this is a useful explanation considering that in the future there will be no age limit and the age limit for registration will be reduced, leaving room for students of group age (UNESCO, 2024). School participation in household surveys and censuses is often measured by whether students take a grade or level of education during the school year. Therefore, school attendance indicators are derived from household survey data on participants. According to UNESCO Institute of Statistics (UIS) (2024) in the case of secondary education, a GAR value approaching or exceeding 100% indicates that a country is able to accommodate all of its school-age population, but it does not indicate the pro-portion already attending. Therefore, a GAR of 100% is required but not sufficient for admission to all deserving students. When the GAR of the program is given above 90%, the total number of quotas of students reaches the number required for international registration for the legal age group.

METHODOLOGY

This study used a convergent parallel mixed techniques design. According to Creswell (2012), this form of research design was a mixed study design. Convergent (parallel or contemporaneous) mixed method designs, according to Creswell, are crucial because they seek to concurrently collect qualitative and quantitative data, combine the two kinds of data, and apply the findings to a deeper understanding of a study subject. The fact that obtaining information from the two categories results in a deeper comprehension of a research subject and that one type of information offers strength to offset the shortcomings of the other is a basic defense of this strategy. Creswell (2012) added that defects in either qualitative or quantitative data can be improved using this study approach. In order to fully understand the phenomenon of superfluous costs and determine if it predicts student involvement in public day secondary schools in Laikipia County, the current study purposefully gave equal weight to both qualitative and quantitative data.

The researcher used three interrelated steps in this design: Initially, both open-ended and closed-ended questions were used to collect data simultaneously on both the quantitative and qualitative levels. Second, analysis of the quantitative and qualitative data was carried out independently and concurrently. Third, the results from the two types of data were integrated and their convergence or divergence was discussed in order to provide a comprehensive understanding of the problem.

RESULTS

The Extent to Which Parents' Association Costs Predict Secondary school Gross Attendance Ratio

Observed Distribution

An ordinal logistic regression was conducted to investigate the relationship between the gross attendance ratio (measured on an ordinal scale) and the eight independent variables: construction of new classrooms,

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school fence, school toilets, school store, school laboratories, school office block, lunch programme, and child's uniform. To determine whether the parents' association costs could predict the gross attendance ratio, an ordinal logistic analysis was conducted and the distribution of the predictors is indicated in Table 1

Table 1: Observed distribution of the gross attendance ratio and the predictors construction of new classrooms, construction of school fence, construction of school toilets, construction of school store, construction of school laboratories, construction of school office block, lunch programme, and child's uniform.

Case Processing Summary			
		N	Marginal Percentage
Construction of classrooms	NIL	6	1.7%
	500-800	20	5.7%
	801-1100	52	14.7%
	1101-1400	100	28.3%
	1401-1700	91	25.8%
	1701-2000	71	20.1%
	ANY OTHER AMOUNT	13	3.7%
Construction of school fence	NIL	26	7.4%
	500-1000	33	9.3%
	1001-1500	84	23.8%
	1501-2000	105	29.7%
	2001-2500	70	19.8%
	ABOVE 2500	34	9.6%
Construction of school toilets	NIL	33	9.3%
	500-1000	42	11.9%
	1001-1500	116	32.9%
	1501-2000	95	26.9%
	2001-2500	43	12.2%
	ABOVE 2500	23	6.5%
Construction of school store	NIL	41	11.6%
	800-1000	140	39.7%
	1001-1200	97	27.5%
	1201-1400	54	15.3%
	1401-1600	20	5.7%
Construction of school laboratories	NIL	17	4.8%
	1000-1500	37	10.5%
	1501-2000	83	23.5%
	2000-2500	118	33.4%
	2501-3000	76	21.5%
	ABOVE 3000	22	6.2%
Construction of school office block	NIL	32	9.1%
	500-1000	35	9.9%

Case Processing Summary			
		N	Marginal Percentage
	1001-1500	89	25.2%
	1501-2000	116	32.9%
	2001-2500	55	15.6%
	ABOVE 2500	25	7.1%
Lunch programme	2501-3000	142	40.2%
	3001-3500	143	40.5%
	3501-4000	54	15.3%
	4001-4500	14	4.0%
Child's uniform	1001-1500	22	6.2%
	1501-2000	147	41.6%
	2001-2500	132	37.4%
	ABOVE 2500	51	14.4%
Valid		353	100.0%
Missing		0	
Total		353	

Over 74% of the parents paid between KES 1001-2000 shillings as fees for the construction of classrooms while only 1.7% did not pay anything. Majority of the parents (73%) incurred costs for the construction of school fence ranging between 1001-2500 shillings while 59.8% paid money construction of school toilets ranging between 1001-2000 shillings. Over 67% of the parents remitted to the school 800-1200 shillings as charges for the construction of school stores and 1001-3000 shillings for the construction of the school laboratories representing 78.4 %. Only 9.1% of the parents did not contribute fees for the construction of the office school block while about 73.7% paid between 1001-2500 shillings. The lunch programme was a significant fee with over 80% of the parents paying 2501-3500 shillings while 79% of the parents paid 1501-2500 shillings for school uniform.

Model Fitting Information

The table of model fitting information provides the analysis of the on the -2 Log Likelihood of the null model (without private costs) and the final model (with private costs). The presence of a relationship between the dependent variable and combination of independent variables is based on the statistical significance of the final model. From Table 4.3, the -2LL of the model with only intercept is 1175.318 while the -2LL of the model with intercept and independent variables is 0.001. The difference (Chi-square statistics) is 1175.318-1116.156=59.162 which is statistically significant at $\alpha=0.05$, $p < 0.033$. The conclusion is that the dependent is associated with independent variables in complimentary Log-log link function.

Table 2: Model fitting for parent's association cost and gross attendance ratio

Model Fitting Information				
Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	1175.318			
Final	1116.156	59.162	41	.033

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Goodness-of-Fit

The goodness-of-fit is determined by the Pearson statistic which measures the extent of the relationship between linearly associated variables and the deviance which is the likelihood-ratio test and is a measure of lack of fit between the model and data. When the deviance show tendency towards being large then the fit is poor. The difference between the deviances D0 and D1 has a large-sample chi-square distribution with degrees of freedom equal to the difference in the number of parameters estimated. The null hypothesis states that the location parameters (slope coefficients) are the same across response categories. From the goodness-of-fit statistic the null hypothesis is accepted and that the observed data were consistent with the estimated values in the fitted model since the p was insignificant, $p = 1.000 > 0.05$.

Table 3: Goodness-of-Fit for parent's association cost and gross attendance ratio

Goodness-of-Fit			
	Chi-Square	Df	Sig.
Pearson	1714.991	1624	.057
Deviance	1109.224	1624	1.000

Pseudo R-Square

The pseudo R-square provides various measures that explain the variance in dependent variable considered by the model. Cox & Snell's pseudo R-square has a maximum value that is not 1 thus the full model is weak in predicting the outcome since the likelihood value is 0.154. Nagelkerke R-square of 0.160 reveals that there is a weak association between the independent variables and the dependent variable. McFadden's the ratio of the likelihoods suggests the model sparsely predict the outcome since its likelihood is 0.050

Table 4: Pseudo Square for parent's association cost and gross attendance ratio

Pseudo R-Square	
Cox and Snell	.154
Nagelkerke	.160
McFadden	.050

Parameter Estimates

The table of parameter estimates provides the estimated coefficients for each predictor and their statistical significance. From table 4 none of the factors of the parents' association costs influenced the gross attendance ratio. For a significant statistical relationship the p-value has to be <0.05 or 5%. The p-value for all predictors was greater than 0.05 which indicated a non-significant relationship between the outcome variable and the predictors.

Table 4: Parameter Estimates for parent's association cost and gross attendance ratio

Parameter Estimates								
		Estimate	**Std. Error**	**Wald**	**df**	**Sig.**	**95% Confidence Interval**	
							Lower Bound	**Upper Bound**
Threshold	[GAR = 25.00]	-5.536	4.365	1.608	1	0.205	-14.092	3.020

	[GAR = 33.33]	-4.148	4.363	0.904	1	0.342	-12.700	4.404
	[GAR = 50.00]	-2.959	4.362	0.460	1	0.497	-11.509	5.590
	[GAR = 66.67]	-1.564	4.359	0.129	1	0.720	-10.107	6.980
	[GAR = 100.00]	0.107	4.358	0.001	1	0.980	-8.435	8.648
Location	[Q1B=1.00]	-0.661	0.949	0.486	1	0.486	-2.521	1.199
	[Q1B=2.00]	0.557	0.696	0.641	1	0.423	-0.807	1.922
	[Q1B=3.00]	0.450	0.604	0.554	1	0.457	-0.734	1.633
	[Q1B=4.00]	0.429	0.577	0.554	1	0.457	-0.701	1.560
	[Q1B=5.00]	0.682	0.573	1.416	1	0.234	-0.441	1.806
	[Q1B=6.00]	0.359	0.578	0.386	1	0.534	-0.774	1.492
	[Q1B=7.00]	0[a]			0			
	[Q2B=1.00]	-0.136	1.902	0.005	1	0.943	-3.863	3.591
	[Q2B=2.00]	-0.883	1.895	0.217	1	0.641	-4.597	2.832
	[Q2B=3.00]	-0.390	1.882	0.043	1	0.836	-4.078	3.298
	[Q2B=4.00]	-0.107	1.877	0.003	1	0.954	-3.786	3.572
	[Q2B=5.00]	-0.401	1.881	0.045	1	0.831	-4.088	3.286
	[Q2B=6.00]	-1.400	1.889	0.549	1	0.459	-5.101	2.302
	[Q3B=1.00]	-1.430	1.869	0.585	1	0.444	-5.093	2.234
	[Q3B=2.00]	-0.757	1.890	0.160	1	0.689	-4.461	2.948
	[Q3B=3.00]	-0.749	1.867	0.161	1	0.688	-4.409	2.911
	[Q3B=4.00]	-0.670	1.869	0.129	1	0.720	-4.333	2.993
	[Q3B=5.00]	0.066	1.881	0.001	1	0.972	-3.620	3.753
	[Q3B=6.00]	-0.127	1.899	0.004	1	0.947	-3.850	3.596
	[Q4B=1.00]	-2.228	1.952	1.303	1	0.254	-6.055	1.598
	[Q4B=2.00]	-2.238	1.939	1.332	1	0.248	-6.038	1.563
	[Q4B=3.00]	-2.199	1.949	1.273	1	0.259	-6.018	1.621
	[Q4B=4.00]	-2.482	1.955	1.612	1	0.204	-6.313	1.349
	[Q4B=5.00]	-2.018	1.985	1.034	1	0.309	-5.908	1.872
	[Q5B=1.00]	0.281	0.622	0.203	1	0.652	-0.939	1.501
	[Q5B=2.00]	-0.191	0.525	0.132	1	0.717	-1.220	0.839
	[Q5B=3.00]	-0.065	0.464	0.020	1	0.889	-0.975	0.845
	[Q5B=4.00]	0.301	0.450	0.447	1	0.504	-0.581	1.183
	[Q5B=5.00]	0.670	0.479	1.952	1	0.162	-0.270	1.610
	[Q6B=1.00]	-0.051	1.889	0.001	1	0.978	-3.753	3.651
	[Q6B=2.00]	0.954	1.909	0.250	1	0.617	-2.787	4.694
	[Q6B=3.00]	0.547	1.881	0.085	1	0.771	-3.140	4.234
	[Q6B=4.00]	0.649	1.873	0.120	1	0.729	-3.022	4.321

	[Q6B=5.00]	0.979	1.884	0.270	1	0.603	-2.714	4.672
	[Q6B=6.00]	0.743	1.889	0.155	1	0.694	-2.959	4.445
	[Q7B=2.00]	-0.457	0.544	0.705	1	0.401	-1.524	0.610
	[Q7B=3.00]	-0.454	0.535	0.719	1	0.396	-1.501	0.594
	[Q7B=4.00]	-0.490	0.584	0.705	1	0.401	-1.634	0.654
	[Q8B=3.00]	-0.082	1.929	0.002	1	0.966	-3.864	3.699
	[Q8B=4.00]	-0.747	1.886	0.157	1	0.692	-4.443	2.949
	[Q8B=5.00]	-0.673	1.888	0.127	1	0.721	-4.375	3.028
	[Q8B=6.00]	-0.407	1.894	0.046	1	0.830	-4.118	3.305

Test of Parallel Lines

The test of parallel lines is used to checks the proportional odds assumption to judge the model adequacy. A non-significant result (p-value > 0.05) means that the assumption holds, and the model is appropriate. The model null hypothesis states that the slope coefficients in the model are the same across the response categories. The significance p = <0.001 <0.05 indicated that there was a significant difference for the corresponding slope coefficients across the response categories.

Table 5: Test of parallel lines for parent's association cost and gross attendance ratio.

Test of Parallel Lines				
Model	-2 Log Likelihood	Chi-Square	df	Sig.
Null Hypothesis	1116.156			
General	837.808	278.348	164	<.001

Public day secondary school charge parents association fees to undertake various projects in the school. The charges were assumed that they would affect the gross attendance ratio of the students' in Laikipia County. However, from the analysis the parents' association costs did not have a statistically significant relationship with the gross attendance ratio. Therefore, the parents' association costs were not a significant influence to the gross attendance rates. Neither the decrease of increase of any of the parents' association costs would significantly alter the gross attendance rates.

CONCLUSION

The parents association costs included fees paid for the construction of new classrooms, school fence, school toilets, school store, school laboratories, construction of school office block, lunch programme, and child's uniform. This study conducted a review of extant literature linked to parents' association costs to student participation. Mugiraneza (2018) concluded that hidden costs including charges for infrastructural development indicated some influence on students' participation in secondary school education. Since the extraneous costs are burdensome especially to poor parents, Asaba et al (2016) concluded that they affected the transition and completion rates which essentially have a bearing on the enrolment and attendance.

Additional costs may impede on a parent's ability to pay the fees charged. However, it does not always transalte to lack of students' partcipation in secondary school. In this study parents' association were found to have no statistical significance to the gross attendance ratio. Although the costs existed, they did not impede on the students' participation.

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