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# RELATIONSHIP BETWEEN SCHOOL ACCOMMODATION STATUS AND PRINCIPALS' PERCEPTIONS ON COST EFFICIENCY OF PUBLIC SECONDARY SCHOOLS IN BOMET COUNTY, KENYA

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**Abstract**

*Public secondary schools in Kenya are expected to operate cost-efficiently. However, the cost of education in many public secondary schools in Bomet County remains high, indicating potential cost inefficiencies. Grounded in the cost efficiency theory and the principal-agent theory, this study investigated the relationship between school accommodation status and principals' perceptions of cost efficiency in public secondary schools in Bomet County, Kenya. The correlational research design was adopted. Purposive, stratified, proportionate, and simple random sampling techniques were used to select five Sub-County Directors of Education (SCDE) and 175 principals. Data was gathered from principals using a semi-structured questionnaire, while information from SCDEs was collected through an interview schedule. The instruments were piloted in Nakuru County, yielding validity and reliability thresholds of 0.822 using Cronbach's alpha. Descriptive statistics, including frequencies and percentages, were used to analyse the data, while the Chi-Square test of independence examined the relationship between school accommodation status and principals' perceptions of cost efficiency using SPSS software. Results showed that 77.1% of principals were from day schools, 17.4% from boarding schools, and 5.5% from day/boarding institutions. Nearly three-quarters (74.8%) of principals perceived their schools' cost efficiency as low, 20.3% as moderate, and 4.9% as high. SCDEs were aware of cost-saving strategies employed by principals but did not explicitly state how these impacted cost efficiency. No statistically significant relationship was found between school accommodation status and perceptions of cost efficiency ($\chi 2$ [4, N = 143] = 2.121, $\rho > .05$). The study concludes that most public secondary schools in Bomet County are day schools, with cost efficiency perceived as low. Factors other than accommodation status likely influence principals' perceptions of cost efficiency. Recommendations include equipping principals with financial management skills to enhance schools' cost efficiency.*

***Keywords**: accommodation status, cost efficiency, perception*

## Introduction

Secondary school education is considered as a significant stage of schooling as it feeds tertiary institutions and universities with graduates, and the world of work with labour (Mackatiani, Mackatiani, Likoko, & Kasuki, 2023). It refers to the stage of formal *education that follows primary school and precedes higher education (Behlol et al., 2019).* This stage of education is important because it is supposed to equip learners with cognitive, psycho-motor and affective skills and assist them develop mentally, socially, morally and spiritually so that they are all-round persons (Lessa et al., 2018). These skills are essential as they enable learners to acquire positive attitudes, self-respect and respect for others, sense of purpose, integrity and self-discipline and consideration for others. Secondary school education also influences primary school education by providing pupils with the motivation to remain in school, learn and progress (Raghupathi & Raghupathi, 2020).

Schools are established to achieve stated goals and objectives such as providing learners with opportunities to acquire knowledge, skills and attitudes for development of the self and harmonious co-existence (Kinuthia, 2018). Provision of adequate resources is a prerequisite to actualization of educational goals and objectives in school system (Eric & Ezeugo, 2019). This calls for adequate financing of education across the world by governments, given that it is their mandate to do so (Roser & Ortiz-Ospina, 2016). However, governments worldwide

do not have adequate funds to meet the demands of education and are therefore under increasing pressure in schools to use education resources efficiently (World Bank., 2020). These financial challenges demand cost efficiency in the management of resources in schools.

Cost efficiency has been defined as the act of saving money by changing a product or process to work in a better way (Menon & Phalachandra, 2018). In the context of schools, cost efficiency is concerned with achievement of stated education objectives at the lowest possible cost or achievement of better outputs for a given set of input resources (Olatunji et al., 2017). It means that determination of cost efficiency requires availability of input and output data. However, there is controversy over what constitute an input and output, due to the complex nature of education (Barra & Zotti, 2016; Tellis, 2017; Wirtz & Zeithaml, 2018). Scholars like Gralka et al. (2019) consider school infrastructure, instructional materials, teachers and support staff as education inputs. Organization for Economic Co-operation and Development (OECD) (2017) is of the view that labour, capital and technology used in the teaching-learning process are education inputs. According to Alsuliman et al. (2019), educational outputs include knowledge and skills acquired by students, their performance in examinations and/or pass rates, attitudes, discipline and behaviour. Due to this controversy, cost efficiency is determined using various methods. The expenditure approach involves computing the cost of all inputs and outputs of an education system and expressing them as a ratio (Nauzeer et al., 2018). Agasisti et al. (2017) conceptualized cost efficiency as the best use of input resources to achieve the highest level of educational outputs while Kiveu (2018) determined cost efficiency by examining expenditure incurred as students progressed from the point of entry to point of completion.

Most secondary schools worldwide have limited resources and one of the challenges they face is how to make use of the limited human capital and facilities they possess, to best satisfy their unlimited wants for education (Dearden et al., 2014). Cost efficiency challenges in schools manifest themselves in inadequate, underutilization and wastage of resources, unaffordable and unsustainable costs of education coupled with low outputs (Council of the European Union, 2019; European Commission, 2018). A study by World Bank (2019) estimated that, on average, 16 percent of the public financial resources dedicated to education in developing countries go to waste. Studies conducted in Asia noted that ever rising secondary school enrolment has placed significant strain on both organisations and education institutions leading to inefficient use of resources (Akareem & Hossain, 2016; Wong & Deng, 2016).

Cost inefficiency in secondary schools is also a problem in Africa. The rapid expansions in school enrolment in Sub-Saharan African countries have put considerable pressure on education systems' ability to provide quality education due to increased operation costs (Ajayi et al., 2017; Evans & Popova, 2016 ). Nauzeer et al. (2018) established that cost efficiency of secondary schools in Mauritius were low. A study in Nigeria by Kolawole and Ogbiye (2020) observed high levels of cost inefficiency in schools, that was caused by wastage of educational resources through repetition and dropout rates. Mbiti's et al. (2019) study conducted in Tanzania showed that increase in educational spending had no impact on students' learning due to low teacher motivation as evidenced by classroom absenteeism and poor monitoring of learning activities.

Cost inefficiency in Kenya's public secondary schools is also widespread (Achoka et al., 2018; Lwakasana & Getange, 2017). The inefficiency is attributed to competing demands for limited resources, wastage of scarce resources and higher prices of inputs. A study by Mwikya et al. (2019) found that funds released to public schools were inadequate and never released on time, thus contributing to cost inefficiency. Munene and Tibbs (2018) attributes cost inefficiency in secondary schools in Kenya to high education costs, inadequate facilities coupled with high student to teacher ratios. Public secondary schools in Bomet County, like many others across the country have also been using educational resources inefficiently (Chepkwony et al., 2020; Chirchir et al., 2019; Kitur et al., 2020). Records at Bomet County Director of Education (CDE) (2020) office indicate cost inefficiency in the use of educational resources in public secondary schools as shown by variance between average expected unit costs and actual incurred between the year 2016 and 2019 in Table 1.

**Table 1**
**Unit costs variances for the Years 2016-2019 in Kenya shillings by school accommodation status**

| Accommodation status | Expected | Actual | Costs Variance | Variance (%) |
|---|---|---|---|---|
| Boarding | 69288.50 | 71854.10 | 2565.60 | 3.7 |
| Day | 32,244.00 | 34,709.90 | 2,465.90 | 7.6 |
| Boarding/Day | 49,507.30 | 54,300.40 | 4,793.10 | 9.7 |

Source: County Director of Education (2020)

The data contained in the table reveal that boarding/day schools (KES 2640.70) had the highest variance followed by boarding (KES 2640.70) and day institutions (KES 2640.70). The existing of variances between the expected unit costs and the actual unit cost is an indicator of cost inefficiency.

**Determinants of cost efficiency**

Literature reveals that cost efficiency is influenced by many factors. Training and experience of school administrators have been cited as one of the factors given that enhance school managers' knowledge and skills, which enable them perform their administrative tasks efficiently (Menon & Phalachandra, 2018). Work commitment and motivation of staff have also been associated with cost efficiency (Estigoy & Sulasula, 2020). These two factors have been associated with cost efficiency because committed principals have stronger affiliations to their schools, are dedicated, diligent, and cognizant of the fact that achievement of institutions' objectives depends on them and perform their responsibilities effectively. Tokan and Imakulata (2019) contend that motivation is a correlate of cost efficiency not only because it influences the desire to do something but also impacts on the behaviour of managers. Availability of funds has also been cited as a determinant of cost efficiency since it enables school administrators to plan, budget and use cost saving measures such as bulk purchasing (Gavurova et al., 2017). Mucharreira et al.(2019) and Kwarikunda et al. (2020) found that school characteristics such as accommodation status were significant predictors of cost efficiency.

**School accommodation status and cost efficiency**

Empirical studies show that accommodation status of schools are among factors that affected their cost efficiency (Chiguvi & Ndoma, 2018; Zotorvie, 2017). Accommodation status is defined as whether a school offers boarding facilities to its learners or not (Opiyo, 2019). Mbunde (2018) categorises accommodation status of schools as boarding, day, and boarding and day. Boarding facilities of a school may be within or outside the institution, and comprise of rooms, meals, bedding, water and sanitation and recreational facilities. There is evidence in literature that schools' accommodation status is related to cost efficiency. Behaghel et al. (2017) study indicated that cost per student in institutions which offer accommodation was twice as high as that in day schools. The study attributed the high cost per student in boarding schools to accommodation inputs and high teacher salaries. The study also found that boarding school students performed better in examinations than those in day schools. The good performance in boarding schools was attributed to smaller class sizes, longer study hours, rarely experienced disruptions, and frequent interaction between learners and their teachers. A study in Kenya by Mbunde (2018) revealed that day schools were less costly and attracted more students than those with boarding facilities, and offered basic requirements in the provision of education such as teachers, instructional materials and classrooms at lesser costs.

## Objective of the Study

To establish the relationship between students' accommodation status and principals' perceptions on cost efficiency of public secondary schools in Bomet County.

## Methodology

The correlational research design was adopted for this study, as it is appropriate for examining relationships between variables without manipulation. The study was conducted in Bomet County, Kenya, due to reported cases of cost inefficiency in public secondary schools in the region. The accessible population of the study was two hundred and seventy principals of all public secondary schools in Bomet County and the five Sub County Directors of Education. The principals and SCDE were chosen because they are best placed to provide data on school accommodation status and cost efficiency. According to Kamunge (2016), it is the responsibility of principals to plan, implement and manage school budgets in order to achieve the desired educational objectives. The choice of SCDEs was informed by the fact that they oversee operations of schools in their areas of jurisdiction and have the abilities to communicate their experiences and opinions in an articulate, expressive and reflective manner (Etikan & Bala, 2017). Table 2 gives a summary of the accessible population by sub-county.

**Table 2**
**Distribution of accessible population by Sub County**

| Sub county | Principals | | | SCDE |
|---|---|---|---|---|
| | Boarding | Day | Boarding/Day | |
| Sotik | 16 | 58 | 7 | 1 |
| Konoin | 9 | 32 | 4 | 1 |
| Bomet East | 8 | 28 | 3 | 1 |
| Bomet Central | 9 | 30 | 3 | 1 |
| Chepalungu | 12 | 45 | 5 | 1 |
| | 54 | 194 | 22 | 5 |

Source: County Education Office (2019)

**Sampling procedure and sample size**

The sample size of the principals was determined using the formula developed by Krejcie and Morgan (1970). The formula is as follows:

$$S = \frac{X^2 NP(1-P)}{d^2(N-1) + X^2 P(1-P)}$$

Where:

S = Required Sample

X = Z- value (1.96 for 95% confidence level)

N = Population Size

P = Population proportion (expressed as decimal) (assumed to be 0.5 (50%))

d = Degree of accuracy (5%), expressed as a proportion (0.05) is a margin of error. The formula was chosen because it is ideal for determining the sample of a small and finite population (Etikan et al., 2016). The calculated sample size was 159. The sample was increased by 10% to cater for possible drop-outs, natural attrition and non-responses as recommended by Guetterman et al. (2015). Therefore, the sample increased to 175 principals.

Stratified and proportionate sampling techniques were used to determine the number of principals that were drawn from each of the five sub counties, Sotik, Konoin, Bomet East, Bomet Central and Chepalungu. At the Sub-County level, proportionate sampling procedure was used to determine the number of principals by school accommodation status. Simple random sampling techniques were then used to select the principals who participated in the study. All the 5 SCDE were included in the study, meaning that the census method was used to select them. Table 3 presents the distribution of the sample.

**Table 3**

**Distribution of the study samples by Sub County**

| Sub county | Principals | | | SCDE |
|---|---|---|---|---|
| | Boarding | Day | Boarding/Day | |
| Sotik | 10 | 38 | 5 | 1 |
| Konoin | 6 | 21 | 3 | 1 |
| Bomet East | 5 | 18 | 2 | 1 |
| Bomet Central | 6 | 19 | 2 | 1 |
| Chepalungu | 8 | 29 | 3 | 1 |
| Total | 35 | 126 | 14 | 5 |

A principals' questionnaire and a SCDE interview schedule were used to gather data, with the questionnaire containing closed-ended and open-ended items and the interview schedule being semi-structured. Face and content validities of the instruments were assessed by experts from Egerton University. The principals' questionnaire was piloted in Nakuru County, yielding a Cronbach's alpha reliability coefficient of 0.822. Ethical considerations were addressed during data collection. Data were analyzed using frequencies, percentages, means, and the Chi-Square test of independence to determine the relationship between school accommodation status and perceived cost efficiency.

## Results and Discussion

### Accommodation status

Analysis of data generated by the principals' questionnaire indicated that over three quarters (77.1%) of the respondents were from day schools while the rest were from boarding (17.4%) and day/boarding (5.5%) schools. These results confirm that majority of the secondary schools were day schools at the time of the study in Bomet County. Ngetich et al. (2018) and Oyier (2017) attribute high number of day schools to subsidised secondary school education policy which has played a critical role in sustaining large number of this school category.

These results are consistent with those of a study by Owiti et al. (2020) which noted that majority of secondary schools in Kenya were day schools. The study attributed this observation to increase in number of primary schools creating secondary school wings to accommodate increased demand for secondary school education. The study also attributed the high number of day schools to subsidized secondary school education and the 100% transition from primary to secondary school policy advanced by the government of Kenya. The high number of day schools could also be due to the inability of new schools to mobilise resources for constructing boarding facilities. It could also be attributed to the fact that day schools attract many students from local primary schools whose parents wish them to learn and go home every day given that such institutions are perceived to be more affordable (Maobe et al., 2019).

### Cost efficiency perceptions

Principals' perceptions on cost efficiency of public secondary schools were measured using a set of nine closed ended items. The responses to the items were scored, their means computed and transformed into perceived cost efficiency levels, low, moderate and high. The perceived cost efficiency levels were then summarized using frequencies and percentages. The results indicated that nearly three quarters (74.8%) of the principals were of the view that the cost efficiency of schools

was low while the perspectives of the rest were moderate (20.3%) and high (4.9%). These results are an indication that cost efficiency of schools in Bomet County was perceived to be low. These findings are consistent with those of a study conducted by Esongo (2017) in Cameroon, which established that cost efficiency of secondary schools were low. The study identified inadequate human and technical resources as the challenges to attainment of cost efficiency in schools. Iwedi et al. (2018) found that cost efficiency of most schools in Nigeria were low due to reluctance of teachers to adopt cost cutting and saving strategies in schools.

These findings are also in consistent with those of Adejumo-Ayibiowu (2018) which established cost efficiency of secondary schools was not satisfactory due to declining students' academic performance even with high investment of financial resources. The scholar argues that secondary schools are not cost efficient as they have failed to maximize educational outputs with minimum input costs. Further, the results support those of Mwikya's et al. (2019) which showed that cost efficiency of most school was low. The low cost efficiency was attributed to inadequate funds given to public schools, which was never released on time. These challenges contribute significantly to students dropping out of school, low transition rates, wastage and inefficiencies in provision of educational services.

Analysis of data on cost efficiency provided by the SCDEs indicated that they were aware of strategies adopted by principals to reduce operational costs and enhance savings in schools such as allocating teachers additional work, students cleaning and weeding instead of hired labour. However, the SCDEs did not explicitly indicate how these activities, which aim at cutting on expenditure and saving impacted on schools' cost efficiency levels.

**Relationship**

The relationship between the schools' accommodation status and principals' perceptions on cost efficiency was determined using the Chi-Square test of independence. The results of the test are summarised in Table 4.

**Table 4**

**The Chi-square test results showing the relationship between school accommodation status and principals' perceptions on cost efficiency**

| Scale | Value | df | p-value |
|---|---|---|---|
| Pearson Chi-Square | 2.421 | 4 | .659 |
| N of Valid Cases | 143 | | |
| Cramers V = .09 | | | |

The results indicate that the association between school accommodation status and principals' perceptions on cost efficiency (Cramers V = .09) was weak and not statistically significant, $\chi 2$ (4, N = 143) = 2.121, p > .05. It means that principals' perceptions on cost efficiency were not dependent on school accommodation status. These results are in tandem with those of a study in Indonesia by Salikin and Joni (2019) which noted an insignificant relationship between school accommodation status and cost efficiency. The study attributed the findings to the many demands of educating a learner and high cost of running schools, whether day or boarding.

These findings are also in harmony with those of Mutegi and Muriithi's (2017) study which established that school accommodation status was not related to cost efficiency. This study

noted that cost efficiency challenges in boarding and day secondary schools were mainly due to high cost of education. These included school uniforms, transport costs, pocket money, motivational fees, and remedial fees, boarding fees, development fees and other levies. Further, the study was of the view that money allocated to public secondary schools by the government could not sustain a student in school; as a result, the institutions compelled parents to pay additional fees in form of motivation, boarding and building fees among other payments. Wasike (2020) examined the impact of development levies, lunch programmes and provision of uniform and other basic requirements to students in day schools and academic achievement. The results revealed that school development costs, providing lunch, uniforms and other basic requirements to students were not affordable to many parents. This made schooling a costly undertaking irrespective of whether a student was a boarder or day scholar.

Analysis of data from SCDE interviews yielded results that were contrary to the chi-square test as they showed that the respondents were of the view that school accommodation status impacted on cost efficiency. Some felt that boarding schools have more financial responsibilities which they have to cater for amidst ever rising costs of products and services, which affect budget implementation. Others were of the view that boarding schools, unlike day ones incurred huge food related expenses and maintenance cost because of high rates of breakage rates. The sentiments of these SCDEs imply that they were of the view that there was difference in cost efficiency by school accommodation status, as managing boarding school required more resources, whose costs keeps on changing making the budget implementation process a challenge. They thus perceived that accommodation status affected cost efficiency. These views support those of a study in Brazil by Tigre et al. (2017), which established that accommodation status of schools mattered. The study noted that day scholars encounter a wide range of challenges unlike their boarding counter parts. These included prohibitive commuting costs, time spent on roads travelling from home to school and back, limited access to learning resources available in schools. These challenges not only affect performance of learners in day schools but also unit cost of educating them. Baguma's (2015) also observed that school accommodation status was significantly related to cost efficiency. The study noted that boarding schools in Western Uganda were cost efficient and experienced improved academic performance due to the environment which students enjoy while residing in school premises under teachers' supervision.

## Conclusion and Recommendation

### Conclusion

The study aimed to investigate the relationship between students' accommodation status and principals' perceptions of cost efficiency in public secondary schools in Bomet County. The findings revealed that the majority of public secondary schools in the county were day schools. This was attributed to the creation of secondary school wings in primary schools to accommodate the increasing demand for secondary education, driven by subsidized secondary school education and the government's 100% transition policy.

Furthermore, the cost efficiency of public secondary schools in Bomet County was perceived to be low by most principals. However, the study found no statistically significant relationship between school accommodation status and principals' perceptions of cost efficiency. This suggests that factors other than accommodation status likely influence principals' perceptions of cost efficiency, such as financial management skills, funds, physical facilities, and instructional materials.

**Recommendation**

Cost efficiency of schools was perceived to be low; this suggests that principals had challenges running their schools efficiently. The study recommends that schools principals in Bomet be equipped with financial management skills through training in order to enhance cost efficiencies in schools. In particular, school administrators need to be trained in resources mobilization so that they can be able to mobilize adequate funds, prepare budget and implement the approved budget.

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