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Moderating Influence of Principal Financial Management Skills on the Relationship Between Selected School Characteristics and Cost Efficiency Among Public Secondary Schools in Bomet County, Kenya

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Abstract
Public secondary schools in Kenya are expected to operate at affordable and sustainable costs. Despite this expectation, the cost of education in relative terms in most public secondary schools in Bomet County is still high. This may be an indicator that public schools are cost inefficient in their operations. The purpose of this study was to investigate the moderating influence of financial management skills on the influence of selected school characteristics on cost efficiency of public secondary schools in Bomet County, Kenya. The target population was two hundred and seventy principals of public secondary schools and all the five Sub-County Directors of Education in Bomet County. A sample of one hundred and seventy-five principals was selected using stratified and simple random sampling techniques. A semi-structured questionnaire was used to gather data from the principals and an interview schedule was used to solicit data from the Sub-county Directors of Education. The Content Validity Index was used to check for validity, and it found that all variables had an S-CVI of greater than 0.9, indicating that they were all valid and could be used in the study. All variables had Cronbach alpha coefficients of greater than 0.7, indicating that the variables were internally reliable enough to be used in the study. The data was analysed and summarized using descriptive statistics, such as frequencies, means, and standard deviations. To test the hypotheses, the researchers employed a moderated multiple linear regression analysis in inferential statistics to see how well financial management skills had a moderating effect on the influence of selected school characteristics on cost efficiency of public secondary schools in Bomet County, Kenya. Statistical operations on data analysis were performed using the Statistical Packages for Social Sciences (SPSS) statistics software. The study concluded that financial management skills did not have moderating influence on the relationship between selected school characteristics and cost efficiency of public secondary schools in Bomet County. This was linked to low financial management abilities of the stakeholders, which were characterized by poor financial mobilization skills of school alumni and school administrators. According to the study, the ministry of education should invest in capacity building for school administrators on financial management in order to improve cost efficiency in public secondary schools in Bomet County. School administrators, in particular, require capacity building in order to enhance skills on school resource mobilization. This could create appropriate resources to keep the schools running optimally in terms of cost.
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1. Introduction

Educational expenditures have been used in the literature to explain cost efficiency in education. In a study investigating educational expenditure in relation to academic performance in European Union, (Roszko-Wojtowicz, 2018) view cost efficiency as increase in educational output without necessarily absorbing further resources. Based on secondary data, the study used regression model to provide explanation about the cause and effect among the variables. Results show that favourable conditions in the education arena do not necessarily translate into academic performance. The results of the study were limited to the relationship between educational expenditures and international PISA test. The findings revealed that education spending influence student attainment rates in test scores. The authors recommended institutions to embrace new technology for enhancing cost efficiency. The study concluded that there was a strong positive correlation between per student expenditure and students' performance. The findings of the study concur with Nicoletti and Rabe (2018) who revealed that effects of the increase in school expenditure per student is not commensurate to increase in students' academic scores. Thus, questions arise on the justification on the cost effective use of resources. The current study considered diverse variables in explaining cost efficiency.

Educational policies all over the world are geared towards enhancing educational outcomes in the face of

limited resources. These outcomes are not maximized if resources are used inefficiently. Kosor et al. (2019) in a study focusing on European higher education, view cost efficiency as maximizing educational output by using resources efficiently in terms of costs. The study used Data Envelopment Analysis (DEA) which is a mathematical programming technique to estimate cost efficiency. This study differs in methodological approach from the current study that employs predictive correlational research design. A cause and effect relationship in correlational research technique is advantageous in predicting the variance in cost efficiency as a result of a unit change in independent variables. The study found inefficient use of educational resources as the main challenge in higher education. Using secondary data as opposed to the current study which collected primary data from respondents, the results show that benchmarking with the most productive educational institutions and setting target values as well as eliminating waste in resources allocated to education are good for enhancing cost efficiency. This finding agrees with OECD (2017) that acknowledged benchmarking as a tool for improving cost efficiency of higher education. The study recommended promoting competition, guiding policy and enhancing monitoring of education provision as critical ingredients for enhancing cost efficiency of higher education.

A school system is perceived as cost efficient if no resource is wasted and all processes are optimized to save on costs. In a study conducted to assess efficiency of universities using survey research approach in Europe, Estermann and Kupriyanova (2019) viewed cost efficiency as providing services in teaching with a minimum expenditure on inputs to get the best results. The current study is different in context in investigating cost efficiency in public secondary schools. The study identified low success rates and higher costs associated to research and innovation in higher education as critical setbacks to sustainability. The study also found that unsustainable and inadequate funding constrained the attainment of optimal educational output. Results of the study revealed that digitalization and use of analytical tools in teaching were handy in enhancing student engagement and reducing dropout. Further, the results show that optimizing resource use in facility and space management, procurement, finances, human resources management and student support services enhanced cost efficiency. The study concluded that robust innovative use of students' peer learning, mentoring, placements and external training opportunities enhanced efficiency in learning institutions. The study recommended that higher education institutions should adopt strategies aimed at enhancing efficiency such as digitalization, use of data and analytical tools in educational institutions. The findings were echoed by Jacobson et al. (2019) by recognizing that proper management in the utilization of teaching/learning resources, financial resources and human resources underpin educational goals and institutions. The focus on cost efficiency enables institutions gain more and better educational output using and managing the existing resources in an effectual manner for optimal gains.

Cost efficiency in the context of education involves use of resources to gain optimal educational output. A study conducted in Europe by Agasisti et al. (2017) conceptualized cost efficiency as the best use of the necessary resources to achieve the highest level of educational output. Low parental support in education, inappropriate use of digital learning and low productivity of educational resources are viewed as challenges by the study. The data for the study was measured using Data Envelopment Analysis (DEA) and Free Disposal Hull (FDH). The current study differs from this study in that it uses descriptive statistics and simple linear regression to analyse data. The findings of the study revealed that there was a positive correlation between cost efficiency and academic scores in mathematics. The results also show that there was a negative relationship between cost efficiency and per student expenditure. However, the study found no statistical relationship bet cost efficiency and teachers' salaries and public expenditure on education. The study concluded that it was possible to make the best use of the necessary resources to gain the highest possible output. The study recommended that schools should attain cost efficiency even with reducing the amount of resources used in education. Further, the study recommended that schools should have the best use of the available resources to operate efficiently instead of prioritizing on educational spending. The results of the study concur with Pordata (2016)who found that an efficient use of resources was a perquisite for raising the overall qualitative level of the educational institutions. Schools can be efficient by ensuring there are no wastages in the use of available resources.

Diverse studies in the past link educational resources to the level of cost efficiency. In a study to investigate technical efficiency of schools using a non- parametric technique to analyse efficiency in Spain, López-Martín and Gaviria (2016) suggest that an efficient school is one in which learners' progress is beyond expectation and adding more value to the students' academic result in comparison with schools with similar enrolment and using the same amount of resources. The study noted that low students' pass rate was an impediment to cost efficiency. In support of the value added models in estimation of efficiency, the scholars argued that it was possible to isolate the schools contribution to students' academic progress by examining the influence of school related factors such as syllabus coverage and teacher factors on academic performance. The study concluded by underlining the manner in which resources are used at a specific moment in time as a factor determining the level of school cost efficiency. This conclusion is not consistent with the finding that increasing school resources rarely enhance students' achievements in developing countries Education is faced with limited resources with which to advance its desired objectives (Mbiti et al., 2019).Thus, understanding how and where the resources

can make a remarkable difference is critical.

Use of target cost as a management tool has been given prominence in literature on cost efficiency in educational institutions. In a study examining financial management using target costs in the educational resources in the universities in USA, Bendlin (2017) views cost efficiency as strategies targeted on reducing and managing costs, adequate structure for accomplishing activities with the same resources, contributing to the growth and making educational institution more competitive. The study used descriptive analysis to describe, interpret and analyze results. Regression analysis could have been a better choice for the study because of the predictive power of the target cost on cost management. The results of the study show the significance of controlling maintenance costs, administrative costs and tuition costs to offer quality educational services. The study concluded that education institutions need to offer quality teaching at affordable costs. Additionally, the study concluded that reducing costs should not lead to a drop in the quality of teaching and learning.Rachel and Muchelule (2018) concurred with the study findings by asserting that reducing costs in an institution be achieved by not including the activities that do not add value. Reducing education costs in areas where there is no value addition to the entire teaching and learning process is crucial in cost efficiency. However, this decision must be pursued with caution not compromise quality.

Cost management of school leaders is widely acknowledged as critical pillars of cost efficiency in education. A study conducted by Ahmad et al. (2019) to investigate cost management in public universities in Malaysia, conceptualized efficiency as reducing operating costs in the face of massive cuts in budgetary allocation to an educational institution. The study elicited the required information from respondents by only using a survey questionnaire. Qualitative instruments like interviews or open ended questions could have helped the study access rich and detailed sources of qualitative data. The study noted budget gaps occasioned by reduced government spending and increasing costs as a challenge threatened financial sustainability in Malaysian higher education. Results of the study show that diverse cost management strategies including using energy saving devices, outsourcing of services, decreasing enrolment in high cost areas, teaching staff exchange programmes and student support services such as counselling were effective for realizing financial sustainability and reduced dependence on public spending. The study also found that review of cost schedules and calendars guaranteed full use of facilities. The study recommended consolidation of redundant units in the institution, collaboration opportunities for academic programmes with other institutions and use of technologies for cost efficiency. The study concurred with Tanko et al. (2017) on seeking alternative sources of financial resources such as commercial activities, endowments and philanthropic income to fund their operating expenses. The current study examined cost efficiency in public secondary schools in Kenya using predictive research design which posed a difference from the study.

Educational productivity and costs with respect to cost efficiency are widely discussed. According to Chowdhury et al. (2019) in a study to review digital technologies in New Zealand, cost efficiency refers to improved productivity combined with lower production costs in an organization. The choice of survey research approach in the study to explore the research phenomenon presents weak evidence of cause and effect that is mitigated in correlational research design. The study found high cost and low productivity as challenges standing in the way of cost efficiency. In view of these challenges, the study recommended continuous monitoring and controlling of activities of an organization. Monitoring facilitate corrections of mistakes besides making timely adjustment to the production process, thus, mitigating time and cost consequences. The study findings indicate that cost efficiency is achieved through reduced transaction costs, high inventory levels, appropriate staffing requirements, and sound procurement practices. Additionally, the study indicates that cost efficiency gains accrue to an organization in terms of reduced administration and communication costs. The study concluded that digital technologies revitalize the institutional processes by automating activities, thus catalyzing cost efficiency levels. The conceptualization of cost efficiency in this study agree with Padmanabhan (2018) who view that cost efficiency as minimizing the present educational costs without reducing the present educational output or increasing educational output without having to increase the cost. Therefore, it takes the efforts of school managers cost to reduce costs in such areas including materials and energy without compromising educational productivity.

Educational inputs and output indicators have been used by different scholars to explain the concept of cost efficiency of education. A study conducted by Akbar (2018) to investigate secondary school efficiency using a Data Envelopment Analysis (DEA) and Stochastic Frontier Analysis (SFA) analyses cost efficiency of secondary schools in Indonesia using different input indicators including teacher to student ratio, teachers' qualifications, average secondary school expense, average duration to school and average distance to school while output variable is the average student score. The results reveal that a higher teacher- student ratio and teachers qualification significantly affects students' scores. The study noted that there was no evidence that average school expense and school proximity significantly affect secondary school efficiency. The findings concur to the results of a study conducted in USA by Partelow et al. (2018) that measure efficiency by using the correlation between inputs such as teachers' salaries, financial investments, the school day and output like students'

achievement. School management abilities of raising teacher salaries, increasing financial investment in education and lengthening the school day enhance student achievement and subsequently improving cost efficiency levels of schools.

Literature explicitly shows the significance of productivity and use of tools, equipment, human and material resources in the conceptualization of cost efficiency. Using qualitative approach to examine school resources as an integral component of school efficiency in Nigeria, Usman, (2016a) underlines the significance of catalysing productivity and reducing wastages through utilizing the available resources to achieve maximum results. Combining quantitative and qualitative approach could enhance the validity of the results by maximizing the merits and minimizing the limitations of each research method. The current study filled the methodological gaps which were present by using predictive correlational research design in examining cost efficiency of public secondary schools in Kenya. The study established that proper use of time resource ensures that schools achieve the desired results amicably. The study recommended that school administrators should provide sufficient resources, ensure optimum use and prudent management in order to avoid wastages and enhance efficiency. Additionally, the study recommended that school administrators should establish medical units in schools to monitor the students' health. Furthermore, the study recommended that the school managements should up game toward the award of bursaries and scholarships to the potential dropouts for lack of fees to ensure they complete their studies. These recommendations were echoed by Johnes et al. (2017) who advocated minimizing costs by school management in the utilization of educational resources. The study concluded that provision of appropriate learning materials to schools and organizing conferences, seminars and workshops to enhance the capacity of teachers enhance cost efficiency.

The abilities of the school principals in the effective use of strategies aimed at reducing costs of education has been explored by different scholars. In examining awareness and use of cost reduction teaching strategies in Nigeria, IWEDI et al. (2018) viewed cost efficiency as effectively using cost reduction teaching strategies to accomplish the predetermined educational objectives. Using a survey research design, the findings reveal that principals did not apply safety and maintenance strategies in teaching resulting in failure to achieve the set educational aims. A choice of correlational research design to determine if significant relationship existed could have enhanced the results of the study. The study found that principals were aware of cost reduction teaching strategies but did not apply them as required to avert glaring cost challenges of their schools. The results of the study indicate that lack of motivation, funds and cooperation negatively influenced the awareness and use of cost reduction strategies in teaching. Additionally, the results of the study indicate that principals applied cost reducing teaching strategies to a low extent. The study concluded that effective application of cost reduction teaching strategies help in reducing cost of resources owing to reduced damages. The study recommended routine training, workshops and seminars aimed at acquainting principals with the prerequisite skills on cost reduction teaching strategies. The study findings were echoed by Grimaldi et al. (2019)in asserting that providing access to and effective use of critical educational resource materials reduce per student cost. Effective use of resources by school management optimizes school output.

The ease at which the necessary resources are converted into educational output has been considered as a measure of cost efficiency. A study conducted by Ensongo (2017) to investigate efficiency of schools based on the available resources in Cameroon, considers cost efficiency as existing when the value of an educational output is maximized for a given cost of inputs or where cost of inputs is minimized for a given value of educational output. The study used questionnaires and interview schedule to collect the relevant data. Inadequate human resources and technical resources such as computers and other related technologies were identified by the study as the challenges constraining the attainment of cost efficiency. The study established that principalss did not use the available technical resources and other technologies which have been proven to enhance cost efficiency in education. The results of the study show that there was a significant relationship between the availability of resources and the efficiency of a school. The study recommended the enactment of legislation to cushion schools from inadequacy of resources. The results of the study were echoed by Esan and Adewunmi (2018) who reported that efficiency of secondary schools has not been satisfactory due to declining students' academic performance even with high investment of financial resources on education. Principals of Secondary schools are expected to take proactive measures tailored to maximizing educational outputs with the minimum given inputs.

Educators are confronted by the challenge of understanding the correct amount of inputs required to operate a cost efficient educational process. Mbiti et al. (2019) conceptualized cost efficiency as the extent to which an educational system is able to convert spending on the requisite educational inputs into greatest possible outcome. The study was conducted in Tanzania to examine the impacts of the combination of educational inputs including teachers' incentives, buildings, class size and curriculum on various educational results used experimental design. A choice of correlational research design to enable predictions of the educational results based on the combinations of inputs in the study would have enhanced the findings. The results of the study show that increase in educational spending had no impact on students' learning. The study attributed the findings to low

teacher motivation as evidenced by classroom absenteeism and poor monitoring of learning activities by the educational administrations. The study concluded that an increase in per student expenditure should be followed by a corresponding increase in learning outcomes. The findings contradicted with Azar Dufrechou (2017) who found that educational spending is inversely related to cost efficiency in Latin America. Increase spending on educational resources does not always guarantee improved learning achievements.

Cost efficiency has been viewed as the cost involved as students transit from one educational level to another. A study conducted by Mwikya et al. (2019) to examine the influence of cost of education on transition rates from primary to secondary in Kenya, viewed cost efficiency as the per student expenditure to enable a learner transit from one educational level to the other. The study used descriptive survey research design and therefore differs with the current study that employed predictive research design to predict the influence of school characteristics on cost efficiency. A choice of predictive correlational research design in the study could have enhanced the validity of the results. The results show that public funds released to schools were inadequate and never released on time, thus contributing to the school inefficiency in offering educational services. The findings revealed that education was not affordable to parents. The study concluded that cost of education had profound influence on transition rates. The study recommended that there should be increased government expenditure on education to cushion parents from extra levies charged by schools. The study also recommended bursaries and sponsorships to be given to learners whose parents cannot afford to pay for their education. The findings converged with the results of a study conducted by Sefa-Nyarko, Clement Kyei (2018) that attributed cost inefficiency to high education costs, inadequate facilities and space coupled with high student to teacher ratios. The ability of the principals in financial resource mobilization comes in handy as a safe haven for schools in the face of inadequate resources.

Resources utilization in schools has been considered in the conceptualization of cost efficiency by diverse scholars. According to Wakoli et al. (2019) in a study conducted to investigate the relationship between institutional staffing capacity and efficiency of technical institution in Bungoma County in Kenya, cost efficiency is viewed as the extent to which available educational resources are utilized to achieve the set objectives of the institution. The study adopted a mixed method research approach. The results revealed that institutional staffing capacity influenced efficiency of technical training institutions. The study identified lots of wastage in technical institutions attributable to students' failures in examination as cause of inefficiency. The study also established high student teacher ratio as a factor contributing to low efficiency. This implies that the inadequate teaching and non-teaching staff negatively impact cost efficiency. The study concluded that adequate teaching and non-teaching staff have to be availed by the school principal in order to deliver efficient education systems. The study recommended that there was need for technical training institutions to benchmark and collaborates with other institutions with the view of acquiring innovative skills and knowledge necessary for enhancing cost efficiency. The results are shared with Ensongo (2017) who found that staffs were exposed to insufficient training necessary to take them through demanding teaching approaches in Cameroon. The current study differs from the study in focusing on cost efficiency of public secondary schools in Bomet County.

2.Research Objective

To examine the moderating influence of Principal Financial Management Skills On the Relationship Between Selected School Characteristics and Cost Efficiency Among Public Secondary Schools in Bomet County, Kenya

3.Empirical Literature

Much controversy surrounds the definition and measurement of inputs and outputs of education. The problem lies with lack of agreed goals of education which can be translated to operational and measurable objectives. According to a study conducted by Gralka et al. (2019) cost efficiency is attained when a given amount of output is generated at the lowest cost. In measuring cost efficiency in higher education in Germany, the study used DEA and SFA methodological approaches. However, the current study used regression analysis to predict the observed changes in cost efficiency caused by variation in school characteristics. The results show high correlation of efficiency values with the amount of financial resources invested in education and the number of publications. The study agrees with OECD (2017) that asserts cost efficiency in education is realized when the given educational outputs are produced using fewest amount of resources possible. Thus, a school is considered cost efficient if it is producing given educational outputs from the minimum quantity of inputs such as labour, capital and technology. Effective use of educational resources may become a precursor for achieving the desired educational output at the lowest possible cost.

Scholars perceive cost efficiency in learning institutions in terms of reduced costs in educational investment. According to Serdyukov (2017) in a study conducted to analyze the field of educational innovation in USA, cost efficiency refers to the lowest per student expenditure in education. In using survey methodology, the findings show that effective innovations of scale and use of technology in teaching and learning lower the expense per student. Survey research approach in the study has limitations on external validity; however, using a mixed

research approach that could mitigate the weaknesses associated to a single method could have enhanced the results of the study. The study noted that the cost of education was rising more than inflation in the face of decreasing budget and increasing students' enrolment. The study recommended the school management should embrace online learning as a means to reducing and saving costs in educational institutions. In conclusion, the study observed that comprehensive innovations in education enhanced cost efficiency. These findings are consistent with Ungerman et al. (2018) who concluded that innovation in managing learning institutions is a critical factor in cost efficiency. Similar results were also shown by Kamp and Parry (2017) who proved that modern innovative strategies are significant in boosting performance and reducing costs in an institution. It is explicit from the foregoing that cost efficiency in learning institutions can be obtained by using innovative strategies aimed at reducing per student costs.

Many discussions focus on efficient utilizations of educational resources in the conceptualization of cost efficiency. In using descriptive research design to investigate resource utilization in relation to internal efficiency of secondary schools in Nigeria, Kolawole, A. O., and Ogbiye (2020) viewed cost efficiency as the extent to which a school utilizes physical resources at its disposal in the production of graduates. Thus, cost efficiency estimates the extent to which the allocated resources to a school are utilized to attain the objectives which have been set. The study found that moderate level of physical resources was significantly related to high efficiency. The study identified wastage of educational resources due to repetition and dropout rates as major challenges indicating cost inefficiency in schools. The study established that educational resources were not effectively utilized to enhance cost efficiency. In addition, the study noted that students' performance was declining. Results of the study revealed that there was a significant relationship between resources utilization and cost efficiency of secondary schools. The study recommended that the government should intensify supervision in schools in order to enhance optimal utilization of physical resources. Furthermore, the study recommended that principals should make good use of available resources for effective teaching and learning. The study concluded that resources utilization was critical to the cost efficiency of a school. The results are in agreement with Jacobson et al.(2019) whose findings revealed that availability of physical resources and how they are utilized to achieve the set objectives of the school are significant in determining the level of efficiency. The ability of the school principals on effective utilization of physical resources perhaps influences the interplays between school characteristics and cost efficiency.

Despite the high budgetary allocation to education, studies have found cost inefficiencies. In a study conducted in Nairobi County in Kenya to investigate strategies to resolve cost inefficiency in secondary schools using descriptive survey research design, Ngure and Karuru (2017) found that existing school resources were not used effectively. The findings of the study indicate that day schools are cheaper and therefore draw more students than boarding schools. Day schools offer more opportunities at a lesser cost as teachers, instructional materials and classrooms are majorly the key requirements. The results reveal that the preference of parents on whether a child attends a boarding or day school is highly dependent on costs, distance, norms, and discipline and academic outcomes. The study recommends that MOEST should ensure that all the available school resources are optimally utilized as a solution for addressing cost inefficiency in day and boarding schools. The recommendation mimics Usman (2016) that maximum utilization of educational resources in secondary schools mitigate cost inefficiency by actualizing educational goals and objectives. Secondary education faces cost pressures as well as disparities in resource allocation, so cost efficiency should be a priority for school management.

Studies have documented that student teacher ratio; enrolment and class size are components of school size, which are critical for examining cost efficiency of a school. A study conducted by Kyambi (2019) to investigate the effect of pupil-teacher ratio on curriculum implementation practices in public primary schools in Kenya using a questionnaire and an interview schedule to collect relevant data, established that Pupil Teacher Ratio had a statistically significant influence on teachers' workload. Additionally, the results reveal that Pupil Teacher Ratio had a significant effect on teachers' lesson attendance, performance in individual subjects, the rate of formative evaluation and supervision. The author observed that the challenge of over enrolment and high student teacher ratio were a common phenomenon in the majority of schools. The study concluded that schools had a higher pupil to teacher ratio which substantially influenced academic performance adversely. The study recommends that in order to address the issue of teachers' shortage, the Teachers Service Commission should hire more teachers. Principals of secondary schools should also employ more teachers on Board of Management terms to augment the support from government. The findings are consistent with Ndethiu et al. (2017)who recommended that teachers' professional development, workload reduction and increased resources were a panacea for mitigating inefficiencies characterizing large class sizes in large schools. Caution has to be exercised not to increase cost to the extent the school is rendered cost inefficient.

Cost efficiency levels in public secondary schools in Bomet County may vary according to school characteristics such as single sex and coeducational schools. However, research studies on this area have not been documented. Using descriptive statistics to analyze data, a study conducted by Muriuki et al. (2017) to

examine efficiency in girls' secondary schools in Bomet County, found that high indirect costs of educating girls were associated with low completion rates. This was attributed to the inability of parents to raise the required school fees to sustain their girls and ensure schools realized the intended objectives. The author observed that the high unit cost of educating girls was the source of inefficiency in girls' education. The current study intended to fill the existing gap in examining cost efficiency levels in single sex and coeducational public secondary schools. The study recommended the creation of parental awareness on the importance of investing in girls' education and initiating income generating projects. The study also suggested that the government should allocate more financial resources. This calls for the ability of the principals to be able to mobilize and manage resources. The results were consistent with Jacobson et al. (2019) who found that inefficiency of girls' education in India is attributed to parents getting disinclined to pay the school fees and in meeting expenses such as books, stationary, uniforms and transportation. Therefore, direct and indirect education costs are critical factors for determining the level of cost efficiency in girls' secondary schools.

4.Conceptual Framework

The conceptual framework presents a diagrammatic representation of diverse variables and their indicators. The model depicts interrelationships among independent, intervening and dependent variables as set in the research objectives of the study. The research objectives are therefore the guiding principles for the conceptual framework. The conceptual framework for the study is made of several parts as illustrated in Figure 1.

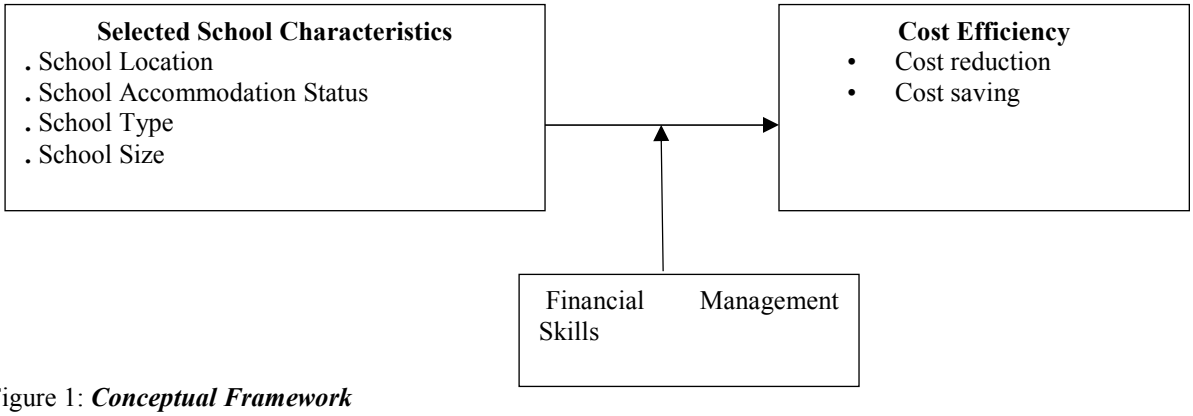

Figure 1: ***Conceptual Framework***

5.Research Methodology

The current study adopted post- positivism research philosophy owing to its flexibility in using various research instruments to examine cost efficiency of public secondary schools clearly and closely. Post- positivism world view considers both quantitative and qualitative methods to be valid in investigating a research phenomenon (Gathii et al., 2019). A post- positivist philosophical research approach advocates methodological pluralism based on the assumptions that the method to be applied in a particular study should be selected on the basis of research questions being addressed (Panhwar et al., 2017). Therefore, principal's questionnaire and the SCDE interview schedule were used in the present study to investigate the research phenomenon from various perspectives which helped to minimize the risk of biases and maximize reliability.

This study adopted predictive correlational research design in which the researcher uses multiple linear regression statistical processes to predict the value of the dependent variable based on the known value of the independent variables (Pituch & Stevens, 2015). Predictive correlational design is used in those cases when there is an interest to identify predictive relationship between the predictor and the outcome/criterion variable (Mao et al., 2017).

In this study, the target population comprised all the two hundred and seventy (270) principals of public secondary schools and all the five (5) Sub- County Directors of Education (SCDE) in Bomet County. There were two hundred and seventy (270) public secondary schools and five (5) Sub Counties in Bomet County at the time of the study (County Government of Bomet., 2019). Therefore, there were two hundred and seventy (270) principals and five (5) Sub County Directors of Education at the time of the study. The principals and SCDE were chosen to participate in the study because they are charged with the responsibility of effectively planning, implementing and managing the school budget in order to achieve the desired objectives of the school (Kamunge, 2016). The ability of the principals and the SCDEs having adequate and authoritative information on cost efficiency of public secondary schools influenced the validity of the research results. The target population of this study was considered as accessible population. Table 1 shows the accessible population by sub-county.

Table 1
The Accessible Population by Sub-county

Sub-county		Sotik	Konoin	Bomet East	Bomet Central	Chepalungu	Total
School Accommodation status	Boarding	16	9	8	9	12	54
	Day	59	32	28	30	45	194
	Boarding/ Day	7	4	3	3	5	22
School size	Single Stream	62	34	29	31	46	202
	More than one Stream	20	11	10	11	16	68
School type	Single sex	12	9	6	6	13	46
	Mixed	70	36	33	36	49	224
School location	Rural	71	33	25	29	52	210
	Urban	11	12	14	13	10	60
Principals		82	45	39	42	62	270
SCDE		1	1	1	1	1	5

Source: Bomet County Education Office Data, 2019

Table 1 shows that the number of principals in Sotik, Konoin, Bomet East, Bomet Central and Chepalungu sub-counties was eighty two (82), forty five (45), thirty nine (39), forty two (42) and sixty two (62) respectively totalling to two hundred and seventy (270). There was a sub- county director of education in each sub-county totalling to five (5) in the county.

The sample size influences the precision of estimates and the power of the study to draw conclusions. According to Showkat and Parveen (2017) when accessible population is greater than 100 (N>100), sampling is necessitated. Given that the study population comprised 270 principals, sampling was adopted. The sample size for the principals selected for the study was determined according to the formula by Krejcie and Morgan (1970) for a finite population as follows:

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

Where:
S = Required Sample
X = Z- value (e.g. 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); it is a margin of error
Inserting the required information into the formula where X= 1.96, Z= 270, P= 0.5 and d= 0.05 gives: $S = \frac{1.96^2 \text{ X } 270 \text{ x } 0.5(1-0.5)}{0.05^2(270-1) + 1.96^2 \text{x } 0.5(1-0.5)}$

= 158.8021311777 =159 principals.

This sample was increased by 10% to cater for possible non- responses Guetterman et al. (2015) Therefore, the sample size increased to 175 principals. This represents the sample for the study and was obtained from the target population using proportionate stratified and simple random sampling methods. In addition, a census technique was used in selecting all the sub counties in the study area. Therefore, all the five (5) SCDE was sampled using purposive techniques in which a SCDE was selected to participate in the study. Table 2 depicts the sampling matrix of the study.

Table 2
The Sampling Matrix

Sub-county		Sotik	Konoin	Bomet East	Bomet Central	Chepalungu	Total
School Accommodation status	Boarding	10	6	5	5	9	35
	Day	38	21	18	19	29	126
	Boarding/ Day	5	3	2	2	3	14
School size	Single Stream	40	22	19	20	30	131
	More than one Stream	13	7	7	7	10	44
School type	Single sex	8	6	4	4	8	30
	Mixed	45	23	22	23	32	145
School location	Rural	46	21	16	19	35	137
	Urban	7	8	9	8	6	38
Principals		53	29	26	27	40	175
SCDE		1	1	1	1	1	5

Source: Bomet County Education Office Data, 2019

Table 2 shows that the number randomly selected from Sotik, Konoin, Bomet East, Bomet Central and Chapalungu is fifty three (53), twenty nine (29), twenty five (26), twenty seven (27) and forty (40) respectively. The total number of sampled schools was one hundred and seventy five (175).

Two instruments, namely: Principal's Questionnaire and SCDEs' Interview Schedule were used to solicit data. The description of each instrument is given in the subsequent sub- sections. Data was collected using a structured questionnaire designed to collect the required data from the principals of public secondary schools in order to address the research objectives of the study. The choice of a structured questionnaire was informed by the fact that it gathers information over a large sample and was more appropriate when addressing sensitive issues since it offers greater anonymity. The main objective of the principal's questionnaire in the current study was to obtain relevant data in the most reliable and valid manner.

An interview schedule aimed at making it possible to obtain the data required to meet the specific objectives of the study will be administered to SCDE. Respondents will be probed using open ended questions. The guide will solicit information covering accommodation status, school size, school type, school location, financial management skills and cost efficiency in public secondary schools by school characteristics.

The Content Validity Index was used to check for validity, and it found that all variables had an S-CVI of greater than 0.9, indicating that they were all valid and could be used in the study. All variables had Cronbach alpha coefficients of greater than 0.7, indicating that the variables were internally reliable enough to be used in the study.

Data analysis means breaking down a whole into its components (Elliott, 2018). Through assembly of the parts, one comes to understand the integrity of the whole. After data collection, the researcher conducted data cleaning which involves identifying incomplete or inaccurate responses. This was corrected to improve the quality of the responses. This study combined both qualitative and quantitative approaches in such a way as to maximize their strengths and minimize their limitations.

6. Data Analysis

The data was analysed and summarized using descriptive statistics, such as frequencies, means, and standard deviations. To test the hypotheses, the researchers employed a moderated multiple linear regression analysis in inferential statistics to see how well financial management skills had a moderating influence on the relationship between selected school characteristics and cost efficiency. Statistical operations on data analysis were performed using the Statistical Packages for Social Sciences (SPSS) statistics software.

The study sought to examine on whether the financial management skills had a moderating influence on the relationship between selected school characteristics and cost efficiency. The study utilized a moderated multiple linear regression analysis in which three models were derived. The first model regressed the independent variables (school accommodation status, school size, school type and school location) against the cost efficiency of the public secondary schools. The purpose of this first regression model is to determine the influence of the independent variables (jointly) on the cost efficiency of public secondary schools in Bomet County. The second model was undertaken in which the moderating variable (financial management skills) was added to the regression model in order to determine on whether the model was still able to predict the dependent variable (cost efficiency). The two models were undertaken with a view of examining the main effects of the independent variables and the moderating variables on the cost efficiency of public secondary schools in Bomet County. The third model was undertaken in which the interaction effects of financial management skills on each of the school

characteristics was introduced to the model. The purpose was to be able to determine on whether financial management skills had moderating effects on the relationship between selected school characteristics and cost efficiency of those schools. Stepwise regression was utilized in order to undertake those three regressions models simultaneously. Table 3 shows the model summary of moderated linear regression.

Table 3

Model Summary of Moderated Multiple Linear Regression

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.831[a]	.690	.681	.12497	.690	77.491	4	139	.000
2	.888[b]	.789	.782	.10349	.099	64.673	1	138	.000
3	.894[c]	.800	.786	.10234	.011	1.782	4	134	.136

a. Predictors: (Constant), School Accommodation, School Size, School Type, School Location

b. Predictors: (Constant), School Accommodation, School Size, School Type, School Location, Financial Management Skills

c. Predictors: (Constant), School Accommodation, School Size, School Type, School Location, Financial Management Skills, interaction effect of school accommodation and financial management skills, interaction effect of school size and financial management skills, interaction effect of school type and financial management skills, interaction effect of school location and financial management skills

The model summary was utilized for the purposes of examining the correlation between the predictors and the dependent variable (cost efficiency). The coefficient of determination, changes in the coefficient of determination between models and whether any observed changes in coefficient of determination were statistically significant were also examined.

In respect to model one, a correlation coefficient of 0.831 and coefficient of determination (R Square) of 0.681 was observed. The results for model one indicated that there was a positive correlation between the independent variables (school accommodation status, school size, school type and school location) on the cost efficiency of public secondary schools. The model one had a coefficient of determination of 0.690 leading to the conclusion that 69.0% of the variance in the cost efficiency of secondary schools in Bomet County was a result of changes in the school accommodation, school size, school type, and school location aspects. The results of this study in which the school characteristics influenced the cost efficiency were consistent with the findings from existing studies. The influence of School Accommodation Status on Cost Efficiency included Ngetich *et al.,* (2018) who found that the average unit cost was Ksh. 22,263 and Ksh. 54,828 for Day and Boarding secondary schools respectively in Nandi County. Salikin *et al.,* (2019) further noted that the high operational cost of the boarding schools necessitates the critical fund raising skills of the instructional leaders as an enabler of resource mobilization to help in the smooth operations. The influence of the school size on cost efficiency was documented by Richards (2017) Ekaette *et al*., (2020) who also linked the school size to the cost efficiency aspects through the mediating influence of the economies of scale. The influence of school type on cost efficiency of public secondary schools was found to raise various issues touching on the girl child such as gender and sexual based offences, harmful cultural practices, and safety concerns of the students in school that are more pronounced in the girls' schools compared to the boys' schools (Nsalamba & Simpande, 2019; Isokon *et al*., 2020; Abuzied & Ali, 2020; Chirwa *et al*., 2016; & Nsemo *et al*., 2020). These aspects were found to have cost implications in their provision. The influence of the school location on the cost efficiency has been raised by Kolbe *et al*.(2021), Angundaru *et al*. (2016), and Whalley and Barbour (2020) who noted that transport costs implications of procuring services for rural schools and inability to charge high fees for schools within rural setup varied according to school location.

The financial management skills were added to the regression model, which led to the achievement of correlation coefficient of 0.888 indicating presence of a strong and positive correlation. The study further found that the coefficient of determination stood at 0.789 which indicated that 78.9% of the variance in the cost efficiency of public secondary schools was a result of independent variables (school accommodation status, school size, school type and school location) and moderating variable (financial management skills). The study noted that there was an increase of 9.9% in the influence of the predictor variables on the dependent variable as a result of the addition of the financial management skills. Further examination of the change statistics indicated that this change in the variance accounted for by the predictor variables were statistically significant in nature.

The importance of the financial management skills on cost efficiency of schools was found to be consistent with empirical results of various studies. In this context, Ithibutu (2017) linked financial management skills of the school administrators with prudent utilization of financial resources, avoidance of inflated costs in provision of services and goods procurement, and curbing of cost escalation in school projects. These aspects lead to the cost reduction and cost saving in running of the school. Koech (2017) in discussing the need for financial management skills in cost efficiency of school projects noted the need for expenditure authorizations to mitigate

against the fraud in the project implementation aspects thus artificially raising the costs of project implementation. Ugiriwabo (2016) in discussing link between financial management skills in secondary schools in Rwanda asserted that financial management skills enabled avoidance of unnecessary risks. Various scholars have also noted the influence of resource mobilization through undertaking income generating projects as financial resources mobilization skill linked to cost efficiency. These scholars include Nambui, 2017); Aholi, Konyango and Kibett (2018); Alemayehu, Ahmed and Legesse (2019); and Mutiso (2019) who in their studies found that the schools involved in income generating activities were able to generate extra income for the effective operation of the schools.

The third model examined whether there were interaction effects of the financial management skills on the independent variables (school accommodation status, school size, and school type and school location). The third model had correlation coefficient (R) of 0.894, which indicated there was a strong positive correlational effect between the predictors and the dependent variable. The coefficient of determination stood at 0.800, which indicated that 80.0% of the variance in the cost efficiency in public secondary schools was due to predictors (independent variables, moderating variable and interaction effects of moderating variable on the independent variables). The study however noted that the change in coefficient of determination in the third model was not statistically significant in nature ($p>0.05$). This implies that the interaction effects of the moderating variable on the independent variable did not significantly contribute to the variance in the cost efficiency. The study thus concluded that the financial management skills did not have statistically significant moderating influence on the relationship between Select School Characteristics and Cost Efficiency.

7.Conculsion of the Study

The study concluded that financial management skills did not have moderating influence on the relationship between selected school characteristics and cost efficiency of public secondary schools in Bomet County. This was attributed to poor financial management skills with the schools in the area characterized by poor financial mobilization skills of school alumni and financial skills of school administrators.

8.Recommendations of the Study

The study recommends that the principals of public secondary schools in Bomet County should undertake capacity building on the financial management skills amongst the school administrators in order to enhance cost efficiencies in schools. In particular, the school administrators need capacity building on school resources mobilization skills to generate adequate resources.

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